Issue 92 • 11 August 1990 • 58p

WIN £200 Worth of Prizes only in the EXPRESS SUMMER GIVE-AWAY Page 54

NEW COMPUTER EXPRESS

BRITAIN'S BIGGEST SELLING COMPUTER WEEKLY

AMIGA

- DPaint upgrade due
- Tower Amiga
- Trouble for 3000

ST

- PC Speed price cuts
- Double density disks
- MIDI music course

PC

- New Norton
- Soviet simulator
- The Perfect office

CPC

- Shoestring games
- Get more memory

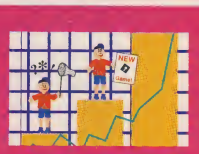
PCW

- Scanning by hand

Specialist columns for: ARC•C64•MSX•QL•BBC SPECTRUM•SAM•PD

HOW TO START YOUR OWN SOFTWARE HOUSE

Make a mint with the EXPRESS guide to digital DIY PAGE 52



CASH IN THE CHIPS

Soon we will download money from a computer into an intelligent card to take to the shops... EXPRESS investigates the technology that could eliminate cash forever PAGE 4

BARGAINS! 28 value-packed pages in **SHOPPING EXPRESS**

VIRUSES: THE EVOLUTION REVOLUTION IS HERE

Could the latest viruses evolve like living things? PAGE 56

THE HEAVYWEIGHT LIGHTWEIGHT

The Alt-386SX portable: Amstrad finally gets it right PAGE 45

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Anco says 'enhanced' version will be slower

REFEREE BLOWS THE WHISTLE ON KICK OFF

An extended version of *Kick Off 2* for the Amiga, which will finally deliver the game promised in the advertisements, is to be released in the first week of September – even though the publisher, Anco, is not keen on the move.

There will be no upgrade for the ST as the modifications would only run a 1040. Similarly only the original World Cup version of *Kick Off 2* will be released on the PC, CPC and Spectrum.

The new extended game will contain the referees, linesmen and scissor kicks promised on the packaging and advertising, and mentioned in the manual of *Kick Off 2 Plus World Cup 90* but not included in the game itself. Data disks and saved games from previous *Kick Off* versions will be loadable, but the added scissor kicks and refs will not appear in them.

• The long-awaited referee ticks off a dirty player while his victim lies injured.

According to Anco boss Anil Gupta, the addition of referees and linesmen, "which are entirely superficial and eat up memory," will slow the game down and lead to problems with goalmouth scrambles. "This was one of the reasons we decided not to include these options in the World Cup version," he continued, "I am very much opposed to the extended package as it is not truly that at all. It's just that many people have asked for it."

Anco told *Express* that for a £1.00 handling charge it would be prepared to exchange Amiga versions of the World Cup version for the upgrade. ST users will not be offered the same deal.

Two new data disks are also due for release. One will contain 200 players, while the other will have 20 saved tactics.

The 8-bit disk games are expected to contain the World Cup module, as will the PC version. Cassette games will not.

For more information contact Anco on 0322 92513. ■

• Dissapointed by *Kick Off 2*'s lack of scissor kicks and referees? Turn to page 55 for Anco's full reply.

Realism at a rate of knots

Cadkey 3.5, the latest version of the top flight PC computer-aided design and drafting package, has been designed to use the powerful Weitek 3167 mathematical co-processor to render images up to three times faster.

Speed is of the essence when creating the kind of smooth 3D photorealistic imagery you see in the picture of the guitar on the right, as without the powerful assisting chip the image would have taken much longer to create.

Photorealism is produced by making a 3D image in the computer's memory, and then calculating the light rays that would fall on it. The textures of all the surfaces are also calculated, as are the colour and shading of every component object in the picture.

Clearly this is a very mathematically-intensive business, which is where the new co-processor comes in, to give the whole process a much needed burst of speed which the PC's main processor just can't provide.

Speed in computing is often just an extra 'bell and whistle' to induce you buy a piece of equipment, but in high end graphics applications speed is very important. For example, on the 25MHz Compaq 386 on which this picture was made, rendering time was about 10 hours without the chip and just 3 hours using the extra co-processing power.

So for applications which involve larger objects like buildings, rendering times of days can be trimmed down to mere overnight jobs.

For more information on the package call ECSL Cadkey on 045382 8084 or Weitek on 081-977-7727. ■

'Consoles are better' claim

Activision's parent company, Mediagenic, has claimed that its 16-bit console games will be better than those on any home computer.

Mediagenic will be developing games for Nintendo's Super Famicom 16-bit games console. Its chairman, Bruce L Davis, claims that: "With the Super Famicom, we have finally reached the point where the depth and quality of video games will clearly surpass that of computer entertainment."

Three games are planned for the Super Famicom's Japanese launch later this year. Nintendo has no plans to release the Super Famicom here due to the relative lack of success of the NES.

Oh what a giveaway!

A talking computer gave its drunken driver away to police last week in Miami, USA.

The brand new Toyota MR2 sports car rammed into the back of a police car on Interstate Highway 95 so hard that it took the officer 134 feet to bring the pair of cars to a halt. When the officers peered into the wreck they found 18-year-old Michael Leone at the wheel unhurt but obviously inebriated.

The clinching factor in the arrest was the undamaged voice synthesiser in the otherwise trashed Toyota's dashboard which was still saying "Slow down! slow down!". ■

Nintendo shows off turtle offer

In what looks like being a major push into the UK games console market, Nintendo will be showing its Mutant Machine, a combination of the Nintendo Entertainment System (NES) and its own *Teenage Mutant Hero Turtles* game, at the Computer Shopper Show this December.

For show goers only, Nintendo will be offering the £99.99 package at £79.99.

Another sign that the Japanese giant is intending a full UK campaign is that the Gameboy hand-held machine will be also shown off at the show. This tiny machine has been a big hit in Japan and America but has yet to officially launched in this country.

Worldwide, there are already 70 software titles available for the Gameboy. When the machine is finally launched in the UK it is expected to have six, including *Super Mario Brothers* and *Tetris*. By the middle of next year a range of 40 titles is planned.

New dBase shrinks

The new version of *dBase* is with us. *dBase IV* 1.1 is said to have undergone some 5 million automated test runs during development.

It will run on machines with only 450K of free RAM – allowing it to run on networked machines – and additionally has its own network support. The optional integrated disk cache handles extended and expanded memory for data and overlay storage.

A new installation process has been added which covers three options: Quick, Full and Menu Driven. New commands to save and restore screens, and set the cursor on and off, have also been included.

A developers' edition of *IV* 1.1 is also available, as is a local area network pack which will allow up to five users access to a *dBase* LAN.

The basic package costs £595, the developers' edition is £895 and the LAN pack £995. Registered users of *dBase III Plus* can pay £125 to upgrade. For more information, call Ashton-Tate on 0628 33123.

What's up Mac?

MacHack '90 is the annual 96-hour technical conference for Macintosh programmers, held in June at Ann Arbor, Michigan. Among the technical debate and serious matters, the Best Hack contest drew a number of interesting entries, with the winner a program called *NetBunny* by Dean Yu.

The program, once set in motion, sets a pink, drum-beating bunny marching from Mac to Mac via the Appletalk network.

Students and teachers get cheap Archies

Not content with a massive 85 per cent of the UK market for school computers, Acorn is already signing up the next generation by offering a range of special deals to both teachers and students, particularly Initial Teacher Training (ITT) students.

The company's Teacher Support Scheme offers teachers a special cash price on either the Acorn Learning Curve package featuring the BBC A3000 micro (£999.25), or the Archimedes 420/1 system (£1,491.60) – or a five per cent finance scheme over 24 months for either package.

In another deal, worked out with the National Union of Students and Barclay's Bank, students can effectively gain free use of the Learning Curve/BBC A3000 package while they study – and only begin repayments once they are earning.

For an ITT student this could mean 'free' use of a computer for four years. The Learning Curve package also includes word processing, painting, drawing and music software – plus a self-training video and a guide to the National Curriculum.

More details of the student scheme can be had from NUS Services on 0457 868003; teachers should contact Acorn on 0223 245200.

String of power launches due for the autumn

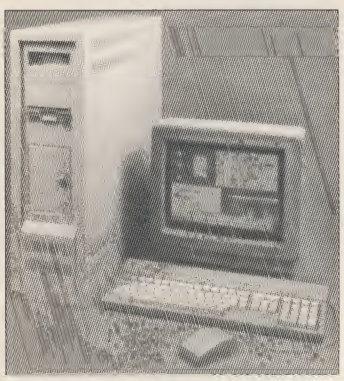
NEW ATARI RANGES GO FOR THE TOP END

Atari boss Bob Gleadow has revealed a string of new launches planned for the autumn which will pitch the company firmly at the high-end computing market.

In addition to the 32MHz TT detailed in *Express* 89, a new version of the Atari TT, called the TT Plus, is expected to have an Inmos-built transputer-based graphics board instead of a graphics blitter chip. The transputer board will allow blistering graphics speed and would be perfect for computer-aided design.

Whether or not the Inmos board will come as standard with the new TT is unknown. Some industry figures have suggested that it will have to be bought as an add-on for the machine. It is also thought that another version of the TT in a tower configuration to allow more expansion cards to be fitted will be released soon.

In an interview with the trade magazine *PC Dealer*, Gleadow said that the basic TT would be launched at the Dusseldorf Show in two weeks time. The machines will arrive in the UK "a few weeks after that".



• Atari's ATW transputer-based computer, soon to be joined by a parallel processing model.

At the same show Atari is likely to announce details of its new, 'Sun beating' Multiple Transputer Workstation (MTW). This will utilise several transputers for parallel processing.

Atari's use of transputers and parallel processing is not a new departure; its Atari Transputer Workstation (ATW) which was also targetted as a Sun beater, was a transputer-based machine. The ATW attracted some attention but did not sell as well as expected.

The ATW is based around a Mega ST but uses the extremely powerful T800 'transputer' microprocessor to do all the calculation while the ST's 68000 handles input and output. The remarkable feature of the T800 transputer is that more processors can be plugged in if you need more speed.

At the time of going to press, Atari would not offer an comment on the TT Plus or the MTW. Its only comment was "All will be revealed in Dusseldorf."

• *Express* will be at the Dusseldorf Atari Show and a full report will be in issue 95.

Share in the war of the world

For PC owners who don't get enough kick out of watching the Middle East in turmoil, there is a new world war simulation from Folio Shareware called *Global Warfare*.

Said to include "mind testing strategy and wholesale violence which can be exercised to the full," *Global Warfare* runs on EGA, VGA, CGA and mono machines, with better graphics on EGA and VGA systems.

Up to 10 people can play, with the idea being to capture regions. You have a number of armies, from one to 99, to be moved on each round, and movement can involve advance or retreat. *Global Warfare* costs £3.95, with registration another £5.

For the less warrior-like PC user, Folio is also releasing a new, menu-driven relational database called *Zephyr* .

The 'database management system is said to be eight times faster than *dBase IV Plus*. The main menu has Lotus-style menu bars across the top of the screen from which drop-down menus are activated.

Folio claims that *Zephyr* is the most powerful database ever released as shareware for the PC. It can simultaneously access up to 25 different *dBase* files.

The maximum database size is one billion records with 256 fields per record. Text fields can be of any length.

You will need a DOS-based PC with 640K of RAM to run the system, all colour cards and monitors are useable and there is also mouse support. Expanded memory is supported and can markedly increase the speed of the program.

***Zephyr* costs £7, with registration being a further $50.**

For more information, call 0274 393679.

Laser link

Who needs boring old copper wire for networking when you could be using lasers?

American Laser Communications Inc has introduced a laser-based data transfer system to the UK which beams network signals from a PC using a laser beam. The system is designed to allow a network to link two buildings without laying a cable between them

LACE, as the range of transceivers is called, transfers data in RS232 and 422 serial modes, as well as sending video and bi-directional audio signals.

All you need are two buildings and two of the LACE tranceivers. Unlike the radio systems which are often used, LACE needs no licence.

The system uses Class IIB lasers which, we are told: "have an output of 20mW - a level unlikely to cause permanent eye damage if misused."

Processor on a card will hold money in computer shopping scheme

MICROCHIP TO STORE CASH

Keyline Shopping, the on-line shopping service previewed in *Express* 18 months ago, has just announced its plans to put smart card driven 'electronic cash' systems in 2.5 million British homes before 1995, *writes Phil South*.

The cards are literally a computer on a card, containing a CPU and 2K of EPROM for reusable storage, and hold personal data on the user. Using the card in personal and public terminals the bearer can purchase items using the new electronic cash concept.

Keyline's Richard Johnstone, the man responsible for the technical aspects of its new smart card system, told *Express* about the pilot scheme. "This will start before the end of the year, consisting of 5,000 terminals distributed by the service providers, like banks, mail order companies, insurance companies etc., mainly existing to customers of telephone-based services. The figure of 500,000 units is our target for the end of next year." Pilot scheme terminals will be distributed to existing customers by the organisations that are providing services such as:

- Banks – Nat West, Bank Of Scotland
- Building Societies – National & Provincial
- Mail order – Freemans, Littlewoods and Kays
- Insurance – Commercial Union, General Accident, Sun Alliance
- Betting Offices – Ladbroke Racing, William Hill, Racing Post
- Supermarkets – Gateway Foodmarkets

• Smart cards pouring off the production line: note the pins making contact with the card's chip.

Keyline itself will also carry out some direct sales to the public. The pilot scheme terminals will not use the smart cards, having the customer information stored in the terminals themselves. The production systems with the card readers will be launched properly in the spring next year. "The card will include an individual's personal data, like name, address, and credit card numbers, so that it can be plugged into any terminal. You'll have terminals located in offices or public places, and as well as the personal data on the card there is the 'electronic cash' facility." This is a scheme by which you download quantities of money from your account on to the smart card and spend it at participating outlets, just as if it were cash.

Electronic cash has gained a lot of interest from the service providers, especially the turf accountants like Ladbrokes and William Hill, as they have problems with credit card customers. By law the betting organisation cannot collect the money if you refuse to pay. With Keyline smart cards however the cash is there in the account and is guaranteed by Keyline.

When customers get the card they sign a direct debit mandate, giving Keyline permission to debit their bank accounts on request from them. This process is more suited to smaller quantities of money where a credit card transaction isn't worthwhile. It's like taking the money out of a cash dispenser, except that it's in electronic form.

Obviously having electronic cash opens up new possibilities for electronic crime, although Johnstone says that smart cards offer very high security. "First of all there is a password, if you don't know that you can't read from or write to the card. And all data is written to the card using the DES encryption algorithm. What this means is only a qualified Keyline service provider can actually alter the data on the card, because it has to be written in an encrypted form."

The user can read their card and check that the data is correct but cannot change the data. The cards are the size of a credit card, with the tell-tale gold square showing where the CPU is located, and have the user name and number embossed on them.

The supplier of the smart cards is to be the French firm Gemplus Card International, which provides the smart cards for the Sky TV decoders, the Jerseycard system and the Telecom Eirann phonecard system in the Republic of Ireland.

The look and feel of the Keyline terminal is to be like that of a portable notebook computer, rather like the popular Z88 computer. Keyline is looking at a target of 2.5 million terminals by 1995. ■

The technology behind the smart card

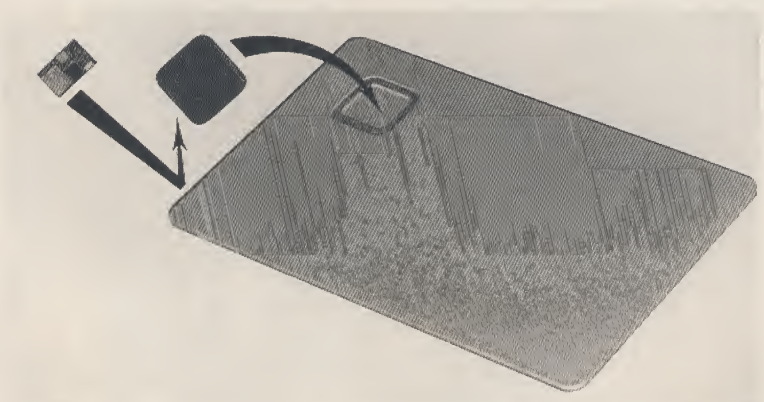
The cards used in the Keyline system are the top of the range Gemplus MCOS16K cards, one of the latest products from the French company.

The cards, called 'purse cards', have 16 kilobits (or two kilobytes) of reusable electronically erasable programmable read only memory (EEPROM) on board to hold all your personal details, and run the Multi-application Chip Operating System (MCOS). MCOS manages all the communication between the card and the outside world, using a serial comms protocol.

Inside the card's memory you can store up to 13,390 units of information and £650 in electronic cash. The chip on the card sits under a small gold patch, which protects the chip and acts as a contact when the card is inserted into a reader. The chip then becomes part of the reader circuitry, and details can be read and written to the EEPROM areas within the chip. Because this access goes through the card's on-board processor, it can be controlled by the chip and is not easy to tamper with as it would be if a straight EEPROM was used.

Electronic cash systems like the Keyline and Jerseycard systems draw their information from terminals managed by 'providers', ie. the banks, and the terminals read and write information onto the cards. The data on the cards is kept safe by a Data Encryption Standard code, or DES, which is a code said to be uncrackable by dint of its great complexity. The DES code is an electronic key which only allows an authorised device to alter the data on the card.

Each time the card is used an incremental certification number is encoded onto the card, and an identical number is sent to the main system. To check if the purse card has been tampered with, the two certification numbers can be matched. Smart cards are used at the other end also, as 'provider cards', and are used to allow an operator to tell the computers to debit or credit.



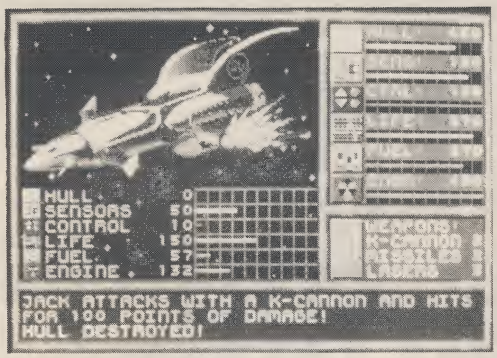
• How the Gemplus smart card fits together, with the gold terminal sitting on top of the microprocessor.

The cards are coming

Other smart card developments from Gemplus are afoot, and chief among these are the Jerseycard scheme operating on the island of Jersey, and the Telecom Eirann phone card system.

Jerseycard was launched as a trial scheme in 1989 for use by islanders and tourists in the same way as money. This summer the scheme gets into full swing, with the first public terminals being installed and the first 7,000 cards, of two types, to be issued this summer. Customers will be able to use the cards at garages, department stores and leisure centres throughout the island. Islanders will be able to use one type of card which is both a 'purse' card – containing electronic cash – and charge card, while tourists will be able to buy single function purse cards.

In the Republic of Ireland, Telecom Eirann has shunned the phonecard systems used by BT and Mercury in the UK in favour of a smart card system. TE has ordered 70,000 Gemplus smart cards, and estimates that 3,000 card-reading phones should be in place by this time next year.



Pass the Buck

Role playing game giant TSR has launched a whole range of Buck Rogers game products onto the market, including board games, role playing games, paperback books and graphic novels, plus of course the inevitable computer role playing game.

Based on the role playing system used in SSI's *Pool Of Radiance*, the first Buck Rogers product is to be *Countdown To Doomsday*, a tale of interplanetary combat in the 25th Century with genetically engineered monsters and robots.

Buck Rogers: Countdown To Doomsday will be available on PC, Amiga and ST in September, and for more information about Buck Rogers call US Gold on 021-625 3388.

• *Left:* Buck Rogers *on the PC.*

New PCs so fast they compete with mainframes

COMPAQ BUILDS THE FASTEST EVER PC

The world's most powerful, and most expensive, PC has just been launched by Compaq at the same time as one of the cheapest full colour workstations was released by Sun Microsystems.

The £8,000 – £11,000 Systempro 486/33 range of IBM compatibles uses Intel's i486 microprocessor running at a lightning 33MHz and is said to be twice as fast as IBM's top range PS/2 PC.

But not to be outdone, Sun have released the £7,995 SPARCstation IPC.

As you might expect from the price and processor specifications, the 486/33 is not targetted at the spreadsheet and database applications usually associated with PCs. Computer aided design (CAD), scientific analysis and other high-end uses are more in its catchment area. This would place it in competition with workstations and even mainframes, and change the angle of Compaq's marketing which up to now has been through business PC dealers.

Although there are already a number of 486 PCs on the market, manufacturers such as Tandon, ALR and Research Machines all have their own machines, none of them can match the new Compaq, at least in terms of price. And none of them are aimed at this crossover PC/workstation market.

This blurred market profile has been further confused by the launch of the new Sun Microsystem's entry-level SPARCstation earlier this month.

The SPARCstation IPC, a full colour workstation, is DOS compatible and costs £7,995. It has a 3.5-inch disk drive, 16-inch colour monitor, a 207Mb hard drive, runs at 15.8 million instructions per second (MIPS) and has 8Mb of memory.

• *Compaq's 33MHz 486 machine: the fastest there is.*

Double size floppy for ST

A 1.44Mb floppy disk drive for the ST called the Powerdrive is available. The Powerdrive will give the ST owner similar storage capacity to that available on the Macintosh and IBM PC.

The drive can also double as a high density MS-DOS drive. At the moment it is only available from a company in the United States called Dreampark. The Powerdrive costs $295. For more information, call Dreampark on 010 1 801 943 4370.

Scan by hand with the PCW

The PCW is to have its first hand scanner – Proscan from Creative Technology, the publisher of the *Micro Design II* desktop publishing package.

The package comprises software, an interface which was designed by SCA Systems, and the scanhead itself. Scans of up to 400 dpi are possible and the images may then be loaded into *Micro Design* or tidied up using *Proscan*'s own software. The present version will only run on 8000 machines, although a 9512 version is planned.

The price is £179. Contact Creative Technology on 0889 567160.

Henrietta goes for the 16-bits

Leading educational software producer Scetlander has announced Amiga and ST versions of its popular fun maths program *Hooray For Henrietta*.

The program was released for the Sinclair Spectrum and PC earlier this year, and C64 and BBC versions will be available in September.

Hooray For Henrietta is aimed at children aged between 5 and 12. It is very upbeat and engages the attention of the child using fun characters like Henrietta, Hopeless Henry and John The Parrot. The story follows the marriage of Henrietta and Henry, and the user must answer the questions correctly if he or she is to prevent John The Parrot from spoiling the occasion.

The Amiga and ST versions are priced at £24.99. For more call Scetlander on 041-357-1659.

Apple links with Sony to provide video for the multimedia Mac

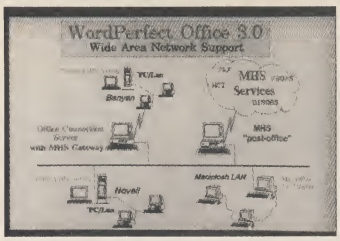
News has reached *Express* of plans for multimedia additions to the Apple Macintosh operating system, as well as a startling new deal with Sony to support 8mm video decks.

Apple already works in association with Sony to produce its floppy and hard disk drives, but now they are working very closely together to provide support for upcoming cheap Sony video decks using the popular 8mm tape cassette.

Other systems are in discussion which users will be able to edit video to within an accuracy of half a second for video production and other as yet untapped areas like 'video e-mail'.

Future operating systems using video sources are reputed to contain provision for sound, full motion video and animation, all on the desktop. The Mac operating system is already event based, so timing of such editing would be child's play, although there is loose talk about a so-called 'QuickTime' language to manage these events in a multimedia context.

When quizzed by *Express*, Apple UK denied all knowledge of such a standard, saying that the name QuickTime is probably a speculative guess by American journalists, based on the existing QuickDraw language used for graphics, and that the Mac doesn't need any additions to the event manager routines to perform such tasks. ■



• WordPerfect Office claims to support local and wide area networking.

Perfect Office

WP Office 3.0 is a range of products designed to make life on networks easier and more efficient, comprising of *Office PC*, *Office LAN* and *WordPerfect Connections*.

Office PC is the new name for the WP product *WordPerfect Library*, featuring Calculator, Calendar, Notebook, File Manager, Editor and Shell. *Office LAN* has the same features as *Office PC*, with the addition of electronic mail facilities. *WordPerfect Connections* contains a number of software products including file server software, and software for multiple gateways to mail systems.

Upgrades are available for current users of *Wordperfect Library* products, and pricing is based on the number of user licences you currently own. ■

New Norton goes faster

Peter Norton Computing has released version 5.0 of its *Norton Utilities* program for PC computers.

As well as updating the popular system with new features for disk repair, file recovery and disk performance, it also features utilities for network users and a new graphical user interface to allow easier access to its often used functions.

New features include:

- Disk Doctor II, diagnoses and repairs disks.
- Calibrate, optimises your disks to run faster.
- File Fix, mends broken *dBase* or Lotus *1-2-3* files.
- Norton Cache, saves certain data in memory for faster access.
- File Save, protects files from deletion.
- Disk Monitor, watches your disk for unauthorised access.

Norton Utilities 5.0 is priced at £139 for first-time buyers, with an upgrade price of £39 for existing users. For more information contact Peter Norton Computing on 081-944-1765. ■

Academics angry at Lotus 'look and feel' cases

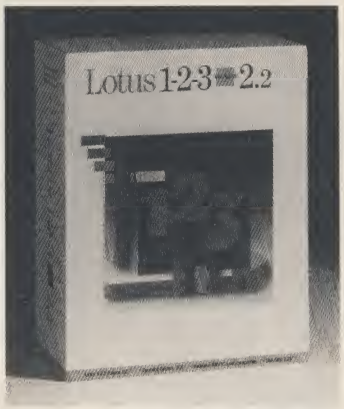
PROTESTERS MARCH ON LITIGIOUS LOTUS

The League for Programming Freedom (LPF) marched on the headquarters of Lotus Corp in Cambridge, Massachusetts, on August 2.

The LPF is a group of professional programmers and professors who feel that excessive 'look and feel' litigation is against the public interest.

'Look and feel' is a pseudo-legal term which relates to software which, while not being directly copied from another product, does bear a striking similarity to it.

Lotus recently took Paperback to court over the latter's *VP Planner* software package. Lotus' argument was that the user interface – the menu system – of *VP Planner* looked too much like what has become known as the Lotus-menu system. This system makes use of keywords, and key-letters from those words, which allow the user to move about Lotus *1-2-3*. A judgement was given in favour of Lotus, which then proceeded to make a further appeal to the court banning Paperback from any further sales of *VP*.



• Lotus 1-2-3: plaintiff in many a legal case.

With this successful judgement under its corporate belt, Lotus is currently in litigation with Borland and The Santa Cruz Organisation over further user interface look and feel problems.

Richard Stillman, the LPF president told *Express* that: "Lotus are trying to pretend that there has been a change in the copyright laws. What the law actually covers is duplication of commercial software and the selling of copies. Not look and feel."

When we asked what impact he thought the LPF would have on companies such as Lotus, Apple, Ashton-Tate and Xerox – which are also being boycotted, he told us: "They think we're just a bunch of dumb academics who wouldn't know how to run a company."

Lotus told us before the rally: "The LPF have a right to their views and we have a right to ours. It should be an interesting day." ■

Megillah multimedia device

Warner New Media has announced a new mass market multimedia device, called the Megillah, based on 12-inch laser video disks.

The disks can hold four hours of digital video per side and multiple audio tracks (for multilingual soundtracks). The player has the ability to overlay text on video and to project simultaneous motion video images in different screen windows.

The device was shown in prototype at the Digital World Conference, and several major hardware manufacturers have shown an interest in producing the unit, reputedly for under the magic $1,000 figure favoured by Commodore's CDTV.

The device already has a *HyperCard* front end, and the package in combination with the Macintosh is called The Whole Megillah. ■

NEWS IN BRIEF

A must for every Boeing 747 owner; the new Automated Washing System can wash and wax a jumbo jet in 80 minutes; it normally takes a team of 20 people four hours to do the job. The robotic system is computerised.

The Federation Against Software Theft (FAST) has moved. Its new address is: 2 Lake End Court, Taplow, Maidenhead, Berkshire SL6 0JQ. The new number to call if you have information on piracy is 0628 660377.

Battery Watch, the guardian of the computer laptop power supply, is now compatible with the Toshiba T-10000SE, Sharp PC-5541, NEC Ultralite and Dell 316LT.

It features a pop-up 'fuel gauge' which shows how much power is left in your battery supply, and costs £35. For more call Travelling Software on 0753 831855.

BACK IN THE USSR

A group of young Russians have written a game which gives westerners a taste of everyday life in the USSR.

Members of the Variant Youth Centre in Moscow have written the game and called it *Queue*, as this is what you spend most of your time doing in the game's model of Soviet life.

The game has been written on a PC, and features EGA graphics illustrating facts known to every Soviet citizen, and along with a quiz on 250 famous Russian people, there is a extensive cookbook of the kind of food Russian people eat.

Price details are not yet available, but the game will ship this month, and the Variant Centre's Dimitry Pashkov says it won't be expensive. What will be expensive is calling for more details on 010 7 095 420 5311. ■

COMPUTER EXPRESS

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We Interrupt this Magazine

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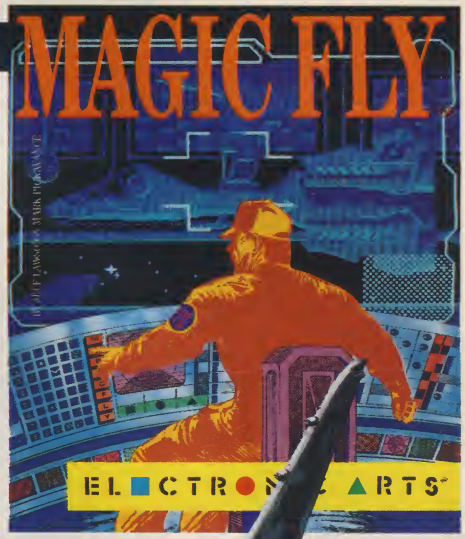

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We'll use this box to keep you informed about our latest news.

...did you know there is a Flood demo disk available at your retailers?

...be on the look-out for previews of PowerMonger from Bullfrog, the authors of Populous.

...our first CD game was released in Japan. Now FM-Towns owners can play Populous, a world-wide phenomenon!

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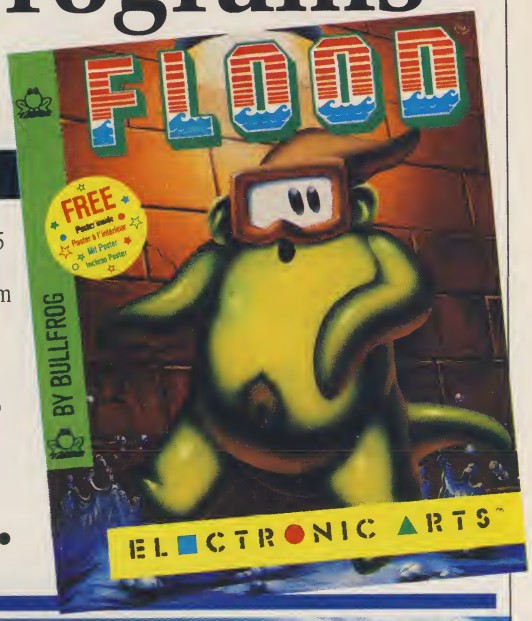

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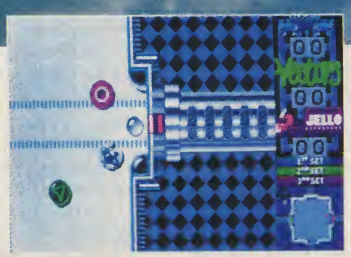
"The latest in the splurge of space-trading games is *Imperium*. The objective is to dominate the galaxy by trading with other planets and colonising new worlds. With an array of winning options, *Imperium* may yet be the most engrossing space-trader ever." – ST Format Magazine.



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ELECTRONIC ARTS™

LOW-COST? WELL, LOWER

Evenlode Soundworks has announced *Cubeat*, a low cost alternative (comparatively speaking, that is) to Steinberg's *Cubase* and as such lacking some features, such as score printing and editing. It does, however, boast many of *Cubase*'s elements: 'moving' graphic interface; cut, copy and paste options with sequence still running; M-ROS compatability, enabling networking and MIDI multi-tasking; and compatability with Steinberg *Cubase* hardware.

It looks very similar to 'big brother', and uses to the full Steinberg's ViSP (Visual Song Processing) technology.

I did say that *Cubase* is only a comparatively low cost alternative to the £550 *Cubase*: it costs £285 from Evenlode Soundworks (0993 898484).

MUSIC ON THE STE

Incidentally, my contacts at Evenlode Soundworks tell me that most current versions of Steinberg software are, as you'd expect, fully STE compatible. With older versions either the double-click actions don't work as described, or pre-1.51 versions of *Cubase* won't load at all.

Registered users of Steinberg programs can call Dave Nicholson on the Evenlode Helpline (0742 684543, Monday to Friday 2pm – 5pm; fax any time). But remember, if you're not a registered user he'll be round your house with a baseball bat and a can of petrol quicker than you can say, "I was just borrowing a friend's copy."

Actually, when I asked the Evenlode crew about the STE's uses to MIDI musos, I got the feeling they were less than wholly enthusiastic about the whole business.

Those stereo phonos for the replay of sampled sound at the back of the STE sound like a great idea, but as the lads point out, while the sampled sound is processed by the DMA chip (meaning the main processor is not tied up while playing sounds), the bad news is that there are only three sample replay speeds. "Anyone for a three note bass line?" they ask, with a certain bitterness in the voice, I thought.

Of course the real boon about the STE for musicians is the readily expandable memory. And, as Evenlode point out, just because you're doubling your memory, for example, doesn't mean you're doubling the number of notes. Oh dearie me no, because neither the operating system nor the current program expand. In *Cubase*, then, while a 1040STE gives you about 50,000 notes, a 1040 with a second megabyte of memory actually offers 160,000.

SOUNDING OFF

Last year South Thames College started an ST-based Introduction to Sound Recording evening course, a project which was successful enough to warrant a repeat.

Beginning in September, the new course runs once a week for 10 sessions on Monday, Tuesday and Thursday evenings and Wednesday afternoons. The cost for all 10 of the sessions is a very reasonable £50.

Interested? Contact Des Lyver or John Dodd on 081-870 2241, extension 340 or 405. Hurry up, though, before all places are taken!

INTRODUCING MIDI

By the way, one book I've had recommended to me for anyone interested in getting involved in making music on the ST is *What's MIDI?* Published by Track Record Publishing, it has nearly 150 pages of well-explained information on the subject, and it costs a very reasonable £4.95 (including p&p) from Making Music mail order on 071-251 2622.

MIDI RECOVERY SERVICE

And finally, as far as MIDI and all that stuff is concerned (for this week), what do you do if you screw up your MIDI data disks? Do you a) cry your eyes out and start again, b) kick the cat and start again, or c) give the whole thing up and take up parachuting?

Well, none of these, actually. What you do is contact that nice Vic Lennard, who can most times restore your Steinberg or Hybrid Arts files. The service costs 50p per 1K for the first 150K, followed by 10p per 1K after this, per disk. Saved! Contact Vic on 081-368 3667.

And if you're wondering why *C-Lab* users can't take advantage of this life-saving opportunity, don't ask me. Ask Vic, or even better, ask *C-Lab*, which according to Vic isn't at all happy about the idea of releasing the file structure information he needs. Funny old world.

ALL HANDS ON DECK

Sierra On-Line has introduced what it claims is the first truly interactive ST card game, *Hoyle's Book of Games*. Now you have the chance to match wits at gin gummy, old maid, hearts, cribbage, crazy 8s and solitaire with Sierra characters such as Larry Laffer, Roger Wilco and King Graham.

"The whole family will gather by the screen," we're confidently informed. It had better: this is just the first of a series of programs involving the Hoyle's licence. *Hoyle's Book of Games* costs £29.99 and is distributed in this country by Activision (0734 311666).

POETIC JUSTICE

At last! A reader without a tin ear has finally responded to my request for ST limericks. Unlike George Hendrie, whose dubious effort ("Atari ... safari ... bra and her sari") does not merit printing in full, Alan Edwards of Leeds sent in half a dozen good efforts. For example:

There was a machine from Atari
On which to play games like Akari
(Warriors, that is)
And programs for biz
The thought of it makes my eyes starry.

Well, it's better than the rest! Or what about:

An Atari aficionado
Thought, "This programming lark's really hard - Oh!
I'm not a dead los
I'll get into STOS"
And he tackled the task with bravado.

I don't think, however, I can print the one about the 'Clever Dick' whose favourite trick was to type nude and fingerless...

SERVICE REPORT

What kind of service do you reckon you'll receive if you have cause to write to software and hardware manufacturers about some ST-related problem? Long-suffering James Beswick of Westerham in Kent reckons that far too many are offhanded in their approach to correspondents.

Perhaps surprisingly he's always had good service from Atari itself. "The longest delay I ever had was over Christmas, but usually they reply in 6-9 days." The Atari Helpline number, by the way, is 081-309 7770.

Not nearly so surprisingly, HiSoft is invariably prompt and helpful, though it understandably insists that you enclose your serial number to the program you're enquiring about. Citizen is fairly good, too, though it tends to send a short letter confirming receipt of yours and only later actually answering your questions.

GFA requires an SAE, as well as the serial number of the program in question.

In general, then, the situation could be better, argues Mr Beswick: "After all, if it weren't for us, they wouldn't exist."

EDUCATIONAL ENTERPRISE

Ian and Caroline Lycett-King are, or rather were, teachers with over 20 years experience. Tired of the rat-race, however, they got out and embarked on an Enterprise Training course, producing educational and games software for primary aged children.

The first release from Silly Soft Stuff (can't say the name fills me with confidence) is *Maths Dragons*, designed to give practice in the four rules of arithmetic, and costing £15 from 0626 779695.

Real teachers getting more involved with software development can only be good sign for educational software, so we wish Ian and Caroline luck with their venture.

EDSOFT AGAIN

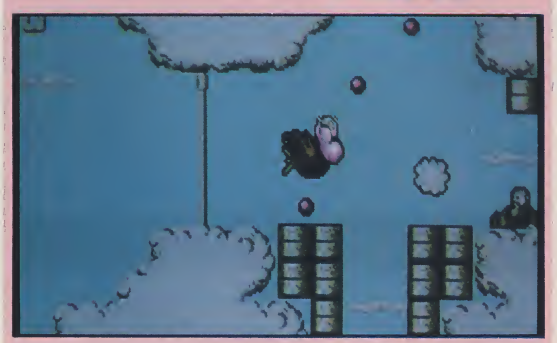
By the way, if you're in a summer hols between years on your GCSE maths course, you may be interested to know that Floppyshop has a complete public domain maths course for the higher grades that could make all the difference to your schooling. Give Steve Delaney a call on 0224 312756.

Steve Carey

MONTY PYTHON

ST GAME of the WEEK

Virgin/Mastertronic • £19.99



In the middle of last year the BBC announced its plans to re-show the *Monty Python* series this year as part of the 20th anniversary of this cult television series. Virgin Mastertronic seized the opportunity to buy up the licence and produce a computer game. Having already jumped on the anniversary bandwagon with *Dan Dare III* to coincide with the 40th birthday celebrations of the *Eagle* comic strip, Virgin is now poised to release the ST version of the *Monty Python* computer game.

Turning this type of licence into a computer game can be a nightmare. Should it follow a typical game genre? Can it be addictive and still be relevant to the licence? Will the BBC find fault with the interpretation of the licence? All these headaches and more confront the game designer. Now *Monty Python* is here and it's time to see whether all those promises made in the press releases have been kept.

***Monty*, the game, is arranged as a series of levels and within each level you need to work your way to the other side, collecting the all-important cans of Spam and avoiding any strange obstacles such as fish, feet or bushes. In between each of the levels is a short animated sequence where Gumby gets his head torn off and his body transformed ready to tackle the next level. These animated sequences can be switched off if you're a boring old sod!**

Your first challenge in the game is to march under a group of falling weights, timing your movements so that the weights fall when you're not underneath them. A small bush follows your movements and each time you stop to look at it, it turns around and moves away. Charge through and dodge all the falling weights and suddenly you're part of an animated sequence in which your head is ripped off and you metamorphose into a, well, fish.

In the next level there are numerous cans of Spam scattered around the underwater levels but they're hidden behind bricks. You can fire the bricks out of the way but if you shoot them out in the wrong order, the Spam falls straight out and you don't have chance to pick it up.

These and other levels have successfully captured much of the atmosphere of the *Monty Python* series which is no mean feat. Unlike the majority of licence deals where the game has quite obviously been written in advance and given a famous name to increase sales, this has been centred entirely around the BBC series with enormous success. Graphics and sound effects are superb and the game is wonderfully absorbing.

Mark Higham

AMIGA

NEW AMIGA SOON?

Just when we all thought it was safe to go out and by the Testarossa of computers, the Amiga 3000, rumours abound concerning the release of another Amiga in the shape of a model A3500.

According to US sources, this new machine boasts almost exactly the same features as the existing 3000, but comes instead inside a very trendy tower casing. It is believed that this may well be the machine that Commodore will pitch as its Unix workstation, due to the popularity of tower systems within the Unix market.

Whether Commodore will bundle the Unix operating system with the machine is uncertain, but this would undoubtedly mean that the machine would come equipped as standard with at least 4Mb, a 100Mb hard drive and possibly even a tape streamer.

LITTLE CRACKER!

Impulse Inc, a company that is rapidly becoming a major force within the Amiga scene, has announced the impending release of a low-cost, 24-bit frame buffer card. FireCracker/24 costs £700 and is designed for use with the Amiga 2000 (or A1500).

The card plugs into the Amiga video slot and can display standard RGB images (such as those produced by *Sculpt-4D* and *3D Professional*) with up to 16 million colours at once on a standard Amiga monitor.

No details about UK availability have been announced, but you can expect to see it in the UK soon.

A3000 HITS TROUBLE

It may be a dream machine, but it seems that the dream may have shattered for Commodore. Rumours indicate that its new baby has become plagued with major bugs within both the hardware and systems software.

According to several major software developers, the new machine has been clocking up an impressive list of faults since Commodore officially launched the machine at the recent *Which?* show. The identified bugs include –

• Problems with RAM expansion. Even if you install 32-bit static RAM within your machine, it will only operate in paged memory mode. This basically means that the machine can never operate at its full speed.

• Problems with SCSI. All hard drives connected to the system have to be terminated with resistors. With a correctly functioning SCSI chain, only the last device should have to be terminated with a resistor. This has forced many users to solder their own resistors on to make the system work correctly.

• Problems with power supplies. Original A3000 power supplies were rather dodgy and caused many machines to blow up. Commodore have rectified this problem with a new type of power supply.

• Problems with Workbench 2.0. Many bugs here.

For starters, the A3000 system software included hard disk tape streamer back up software. Because of bugs, this has been removed.

Secondly, the CLI tool has had to re-installed due to major problems with the AmigaShell stopping requesters from opening.

The original Workbench 2.0 also included many utilities from the PD libraries that had been rewritten to support the new features of Workbench 2.0. Many have fallen over on the A3000, forcing Commodore to remove them.

• Problems with mounting plates. Users have been unable to install internal floppy and hard drives due to short supplies of the internal mounting plates. When questioned about this problem, Commodore supposedly could not assure users that these plates would be available in quantity in the foreseeable future.

It is believed that Commodore has now fixed most of these bugs by fixing a daughter board to the A3000 motherboard, knocking the revision number up to version 7.3.

WORDPERFECT 5 LAUNCHED

The WordPerfect Corporation hasfinally launched version 5.0 of its acclaimed word processing system.

Version 5 features an improved user interface and considerably faster operation, and if it's anything like the PC version 5, more features than you could possibly work out what to do with. Contact your local dealer for more.

NEXT WEEK

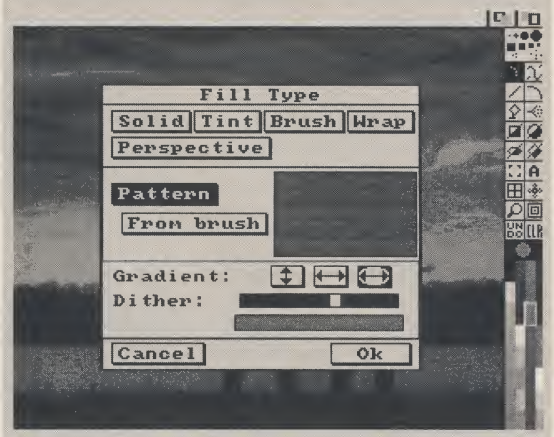
OK, I know – you're all wondering what happened to the review of Marcam's *3D Professional* that I promised in last week's *Express*!

Due to time constraints and the complexity of the program *(Don't you mean the complexity of getting up in the morning Jason? – Dep Ed)*, I've decided to hold back the review until next week.

However, I can assure you that it will certainly be worth the wait! Stay tuned...

Jason Holborn

DPAINT 4 IMMINENT



• DPaint – *due for a major revision soon.*

The gossip channels are alight with news this week. Hottest of all the gossip centres around the possibility of a new release of Electronic Art's *Deluxe Paint* graphics system, in the form of *Deluxe Paint* version 4.

According to my sources, EA in the States is planning to release the new version to complement the recent release of the Amiga 3000 series. The new program boasts little in the way of new features, but has been heavily rewritten to take advantage of the new Workbench 2.0. As I predicted in a past issue of *Express*, the most major addition to *Deluxe Paint* is the inclusion of full support for all the new Enhanced Chip Set screen modes.

With the impending general release of both 2.0 and ECS, it was practically a foregone conclusion that EA would upgrade its paint system at some point if it was not to become obsolete. It's so nice when something you predict actually happens!

But what about HAM mode? Industry viewers believe that Electronic Arts in the States may have taken a U-turn on its previous decision to leave HAM support out of *Deluxe Paint*. When I spoke to the author of the original *Deluxe Paint*, Dan Silva, he revealed that while HAM had been a consideration during the development of the original, HAM support had been eventually ruled out due to the amount of work that would have been involved in making the existing *Deluxe Paint* tools work with the peculiarities of HAM mode.

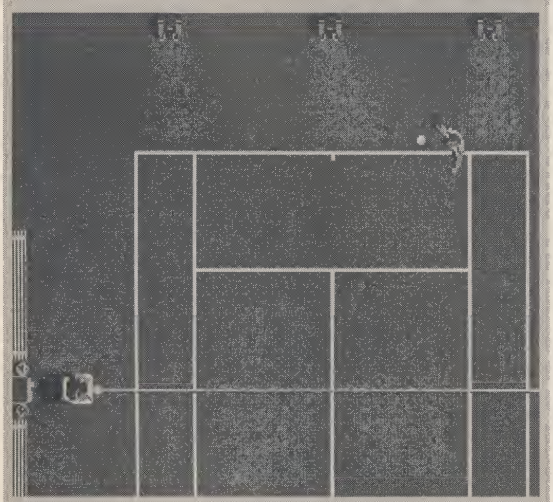
If would seem a sensible move if EA was to include HAM support within this latest release. If support was included, *Deluxe Paint* would become the standard Amiga paint package. Previously, it was necessary to own a second paint package if you wanted to paint in all Amiga screen modes. Many believe that with the blessing of Commodore (which *Deluxe Paint* already has), nothing would stop EA's paint system from becoming the Amiga industry standard.

As a side line, it's almost certain that the programming of the new version has not been handled by Dan Silva, the author of the original. Recent news indicates that Dan has left the employ of EA and is now developing products for the PC software publisher AutoDesk.

TIE BREAK

AMIGA GAME of the WEEK

Ocean • £19.99



With the fervour of the World Cup out of the way and the memory of Wimbledon fresh in people's minds, the software industry has moved away from all things football-related and started towards the peaceful green and white of championship tennis.

Ocean is one of the first to capitalise on this season's climax with the release of *Tie Break*. the game pits the budding Boris Becker as a top-class player up against a wealth of international champions, from a simple one-off friendly match to an entire tournament. Teams can be constructed from the wealth of pre-defined players for either singles or doubles games in a selection of competitions. Once you have set-up your players, you can select the type of surface you wish to play on and the corresponding racquet to use, then it's off to the match, which can take place over three or five sets.

The game itself is controlled by the joystick – each of the four directions corresponding to a type of shot, including lob, overarm smash, forehand and backhand. The player runs into position automatically, so all you have to do is time the shot to control the direction that the ball is returned.

The automatic movement means that you seem to have very little control over how the player reacts and returns the ball. All too often you think that you've hit a corker of a shot, only to watch it fly uselessly over the sideline. Once you get to grips with the controls though, the game does have a fair amount of playability and the graphics and sound are very polished. The court and player graphics are colourful, well drawn and move across the screen smoothly and effectively.

If you really like tennis, then *Tie Break* is about the best thing available on the Amiga to simulate the sport. If only the the game had a little more depth – then it would have been a sure-fire winner.

Maff Evans

SPECTRUM

SUN SUN SUN

As it's summer (and by an amazing coincidence quite sunny too) you might be thinking about neglecting your Speccy for more athletic pursuits like watching the cricket or lying on the beach. But I wouldn't bother because there's a surprising number of top games around at the moment, with a few more promising ones due for release this month.

Out now and worth buying are: *Sim City*; an utterly addictive playing-God simulator; *Turrican*; a colourful shoot 'em up that got 92% in *Your Sinclair*; *Deliverance*; Raf Cecco's sequel to *Stormlord*; and of course the compilation of the same bloke's four best titles, *Cecco's Collection* – which I mentioned in *Express* 90. All of these are certifiably good games that had most reviewers referring to their Bumper Book of Superlatives in an attempt to do justice to them. More excellent looking stuff is on the way as well with, to name but two: *Snow Strike*, an action-based flight simulator with impressive 16-bit-style 3D graphics; and *Shadow Warriors*, a beat 'em up from Ocean with absolutely huge graphics. Playing any of those will be much safer than soaking up all those UV rays, honest.

BEADLE'S ABOUT

Incompatibility problems are about as welcome as a trip to the dentist ... or a visit by Jeremy Beadle ... or a trip to Jeremy Beadle's dentist. In the past we Speccy owners usually managed to avoid such problems and used to snigger smugly at owners of other machines. That was until the release of the +3 and the infamous +2A (that's the black +2), both of which refuse to load a sizeable proportion of software that works perfectly on the original grey +2.

But now the suffering of +3/+2A owners could be lessened courtesy of our old, mysterious and very stupidly named friend, Miktor. Regular readers will know him best for poking exploits which have graced this column on numerous occasions, but now he has decided to use his programming ability for the good of society and has written *GHOST*, a program that banishes incompatibility blues forever. This effectively transforms your +2A or +3 into a nice cuddly and compatible 48K Speccy — in spirit at least. It's pretty long and although I might print it in a future column, the best way to get hold of *GHOST*, and so persuade your +3/+2A to load some of the otherwise inaccessible games in your collection, is to send off to the author for a copy. Miktor, in a display of raw unbridled generosity, will supply a copy of *GHOST* to anyone who sends a blank cassette plus SAE or 10p (for photocopying) and an SAE to him (M Harris) at 1 Salter Lane, Faversham, Kent ME13 8YD. And be sure to thank him for writing it in the first place.

HACKED OFF

Here's this weeks quota of hacks. (I am of course referring to Multiface Pokes rather than a group of run of the mill writers.) The only things I need to tell you are that Keith Campbell kindly supplied them and that you'll need a Multiface tucked in the back of your Speccy in order to benefit from typing them out.

Nemesis	51949,0	Lives
Power Drift	47222,0	Credits
	47242,0	Sure qualifier
Stormlord	56877,127	Lives
	58105,0	No Clock
Vindicator	33448,0	
	34064,0	Infinite lives (level 1)
	38631,0	Infinite rock ets (level 2)
	35055,0	Infinite lives (level 3)

Robin Alway

SAM COUPE

TIP TIME

Here's another spiffing tip from almost-permanent-fixture Barry Walton. Again it modifies *Address Manager 1* and if he keeps this up the publishers, Lerm, should pay him to write the sequel.

"Another tip concerning *Address Manager 1* involves altering the printing tab position to suit your own labels. The program is supplied to print at tab 6 using standard labels. I assume the labels are on tractor feed with one per web. My labels are tractor fed and three across the web. To allow me to print at any of the positions, I did the following:

Load *AM1* and go into BASIC. Alter line 1500 to read:

```
1500 LET Y=*: FOR a=21 to 15 STEP -z1
```

Where * is the tab position you want your label to be printed at. In my case it is either 1, 28 or 54."

Barry will be receiving a reward for his prolific tipping in the near future.

FLEXIPAGE

Good old Flexibase Software has struggled against ROM bugs to provide a Coupé compatible version of their innovative and educational *Flexipage* package.

Flexipage is pretty hard to describe without the aid of diagrams or scale models but the bumph calls it a 'Viewdata/Graphics Computer Authoring System' and I gave the Speccy version a bit of rave review a few months back.

The SAM *Flexipage* is basically the same with several temporary measures introduced to get around the dreaded ROM bugs, pending long awaited arrival of the new updated SAM ROM. Price is the same as for the Speccy versions and you can get more details with an SAE to Flexibase Software, 20 the Parklands, Droitwich, Worcs WR9 7DG. Thanks to Simon Scott of Fastline for supplying me with the relevant info.

Robin Alway

PCW

ACCOUNTDOWN

Accounts packages are coming out quicker than Russian republics. So guess what? DDTP Printing Services of Brixham is marketing another accounts package, called *Quickbuc*. It's a simple incoming and outgoings record that works out VAT (if applicable) and totals. It's very easy to use, although at £20 is a little underpowered. If all you want is VAT worked out and incomings and outgoings totalled, it's just the job; but if that sounds a little bit too primitive, you will want a rather more powerful package like *Money Manager Plus*.

DDTP also does a special program *R-Ham* for radio hams to help them keep up their calling card records (also £20), plus a range of re-inking services that can rejuvenate your ribbons for just £1.20 – you can even have them done in a range of colours from red to violet and from silver to gold. Details on 08045 3144.

IN THE DUMPS ...

... because you can't get a screen dump on your 9512 even though you've got a dot-printer? PCW World may now be able to help with its new utility on disc, SW101, which aims to provide just this. Call 0384 66269 for details.

JUST THE TICKET

Answer to last week's puzzle: how to get *LocoScript* to number tickets automatically for you. The trick is to put the text for the ticket in the header, together with the 'page number' as the ticket number. Then set the page length as the number of lines in the ticket with top and bottom gap 0. Make this a new paper type ([f6] Settings). Then make the main document have as many pages (all consisting solely of [ALT] [RETURN]s) as you want tickets.

FROM LITTLE PIPS...

Starting this week: the A to Z of PIP. The following are some of the options that you can put after a command: PIP M:=A:*.*[a] will copy in the archiving mode. Options can be combined, e.g. PIP M:=A:*.*[acb]. To be continued next week ...

[A] Archive function. Copies only those files that have been edited since the last use of PIP...[A] on them. Very useful for keeping backups.

[B] Block mode. No-one knows what this means.

[C] Confirm. Asks for a Y or N before each file. Very useful to copy all except one or two files from a large batch.

[Dx] Deletes all characters past column x. Useful for files where, for instance, the lines are too long for an 80 character printer.

AUTHOR! AUTHOR!

A recent survey in the magazine *Author* shows that the most popular machine for authors and writers is not the typewriter but the PCW and *LocoScript*. Gosh!

AGAIN! AGAIN!

Readers of this month's *8000 Plus* PCW magazine might find something familiar about computer humorist David Langford's column: it's word for word the same as last month's. Someone got their disks mixed up, perhaps?

Rob Ainsley

MSX

UPGRADE

Many moons ago, when I upgraded my JVC HC-7 GB computer and purchased a Philips NMS 8250 MSX 2 computer, I realised even then that I would have to keep my aging but reliable JVC machine, because many 'older' titles would fail to run on the MSX 2.

The problem was that programmers failed to adhere to the 'rules' of MSX programming and used areas in the memory reserved for future development. Also the MSX 2 computer used a different sub-slot register to the MSX 1 machine. Quite a few games and utilities could be made to run if the appropriate poke was used, but this still meant that about 50 per cent of the software was unusable on the MSX 2 computer.

The MSX user is not alone in suffering this problem. Recently Atari's STE computer also had compatibility problems, and the Spectrum computer has had similar problems with a few models.

SYSTEM

Thankfully, programmers in the UK seem to have got to grips with the system, as nearly all the latest releases load and run on an MSX 2 machine without having to even input a poke. This means that MSX 2 owners can purchase games such as *Manchester United* from Krisalis without the fear of having to return the game to the retailer.

It is strange that all the early games I own that are Dutch in origin, load and run on an MSX 2 without any problems at all. It has taken a long time, but the British programmers have at last learned to write for our machines as well as the Dutch and Japanese can.

LEARNING

If you would like to learn machine code programming on your MSX computer then *Starting Machine Code* is a good introduction for the beginner, and for the slightly more experienced user, Kuma's *MSX Red Book* is highly recommended.

I thought that these books were no longer available, but K-SOFT Computers is advertising them at £7.95 and £8.95 respectively. These are only two of the seven books that K-SOFT has available, so if it's MSX books you're after, send a SAE to K-SOFT, 1 Stanley Street, Retford, Notts DN22 7AE, for a price list.

How K-SOFT manages to have such a good stock of books for the MSX when most can't be found in any store for love nor money, is beyond me.

GRANDAD WRITES

A Mr Lewis of Newport, Gwent, has written to me to say how much he (a 60-year-old grandad) enjoys the MSXtra column in *Express*, and says he read with interest my review of a game called *Attacked*, by Micro Value.

He asks if I could give him the name of a stockist as he has been unable to purchase it locally. How can I refuse when you have said such nice things about my column? Both Tavistock Hi-Fi of Bedford, (0234 56323), and Capri Marketing of Marlow, Bucks, (0628 891101), are advertising this game at £2.99 – so a quick phone call to either should result in at least one happy reader.

Keith Neal

ST 10
Amiga 11

• *Tie Break*, the tennis game for the Amiga

Spectrum 12
SAM Coupé 12
PCW 12
MSX 12
CPC 13
QL 14
BBC 14
Archimedes 14
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CPC

256K RAM PACK BARGAIN

Peripheral supplier Microstyle thinks that 464 owners get a bit of a raw deal compared to 6128-ers. The company's now defunct ROMBoard Xtra was one device designed to redress the balance – by upgrading the 464 to full 6128 spec. Well now Microstyle has come up with another add-on boost for 64K owners (CPC664 too). For £29, including VAT, postage and packing, the company will convert any DK'tronics 64K RAM pack to a full 256K. All you have to do is send in your existing 64K pack plus the loot – what's more, your existing bank-switching software will immediately recognise the extra RAM.

If you've been thinking about a 256K RAM pack, then now's the time to take the plunge – even if you don't have a 64K pack to convert. Microstyle can sell you one of those for £38.99 and convert it at the same time. Total cost will be £67.99, over £20 cheaper than the cost of a 'proper' 256K pack.

Microstyle can be found at 212 Dudley Hill Road, Bradford, West Yorkshire BD2 3DF (0274 636652).

COTTAGE INDUSTRY

A new mail order company has just sprung up in Romsey, Hampshire and with it, a new concept in customer care and back-up. You see, Cottage Software will not only be offering both games and serious software at the usual discount, it will also be offering a free 'hints and tips' service to anyone who experiences problems with any of the games it sells.

The founders, Malcolm Cabot and Patrick Thompson, have both had experience of dealing with mail order companies and reckon they can put themselves in the shoes of customers. They aim to provide a "reliable, friendly and above all efficient" service to banish once and for all those mail order problems.

But what about this 'hints & tips' service?

Cottage Software has compiled a large database of reviews, solutions, games help, and so forth and, if requested, can supply any of these with the game you order, unless of course you prefer to write in after you've had a chance to play the game. And remember that all this will cost you is the price of an SAE.

However, if you would like to get the story straight from the horse's mouth, phone the Cottage Hotline (0703 740342) between 10am and 7pm. And if you send an SAE to PO Box 34, Romsey, Hampshire SO51 8YW, you will get a list of software available and an introductory letter.

MAIL ORDER BLUES

Talking of sorting out mail order problems, Neil McKeown of County Down offers the following advice:

"Many people get into difficulties with mail-order companies. However, these companies are held responsible for their goods under the Sale Of Goods Act, so here is a list of some of the protection you – the customer – is entitled to:

• If you are sent faulty goods, you are entitled to a full refund or replacement – if you report it immediately. If you report it later, then you are only entitled to compensation. The company must also pay for any postage if you return the goods. However, if the goods are damaged in transit on their way to you, the claim should be made against the Post Office.

• If the company goes bust after you have sent them money, your only chance of getting your money back is if the company is part of a mail-order protection scheme. If, on the other hand, you choose to pay by credit card, the credit card company is only responsible if the goods are worth over £100. You cannot cancel the order once you have sent your money unless the company agrees.

• If the price goes up after you have sent your money, the company may only charge more if they have said so in their original advert.

• If you are worried about late delivery fix a date, at least 28 days after you have made your payment, and tell them to send a refund after that time has elapsed. Alternatively you can post-date your cheque for 28 days after you send it, or tell the company not to cash it until then.

• If the goods are not delivered, then they must send your money back. They can only send alternative goods if you agree. Again, it is possible that the Post Office could be to blame in a case like this.

• Be warned. If you buy through a private advert, some of the Sale Of Goods Act doesn't apply. It is always advisable to phone to ensure the goods are in stock before you send any money.

I hope this helps readers in difficulty."

SPINDIZZY PLUS

If you can cast your minds back absolutely yonks to the very dawn of games on the CPC, you may just remember a little number called Spindizzy. About 99 per cent of the people who've played it reckon it's one of the all time classics. The other 1 per cent (which includes me) reckon it's 'orrible – but there you go.

Anyway, Anthony Jones and John Wood have jointly discovered a previously unknown sub-game. Called STIX, you get to it by pressing "F" and "X" on the title screen. Control is by joystick, CLR clears the screen, Space pauses the game and T switches in a trial mode.

Rod Lawton

CODEMASTERS CLASSICS

What do you do with a full-price game that's a couple of years old? Re-release it as a budget, of course. But what do you do when you've got old budget games to hawk off? Codemasters knows the answer, you cunningly re-release them as budget compilations – and at excellent value for money too!

That's exactly what Codemasters has done with four of its favourite simulators, to produce *Quattro Sport*, a selection of sporting challenges to cater for every taste.

The four games on the compilation are: *Grand Prix Simulator*, *Pro Ski Simulator*, *BMX Simulator* and *Pro Snooker Simulator*. And at a price of roughly 65p each, they're all spectacular value.

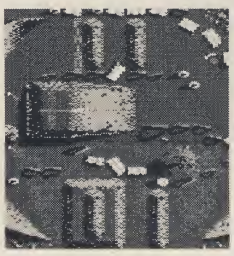
Now I'm not a great fan of snooker on micros, and the last time I went skiing was on a dry slope near Bristol, where I nearly dislocated my thumb falling off at two-and-a-quarter miles per hour, but *BMX Simulator* and *Grand Prix* Simulator are truly excellent little games.

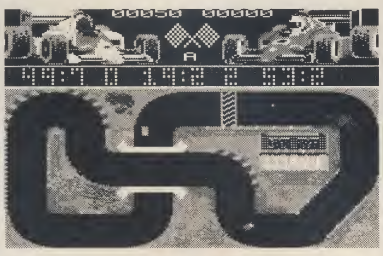
***BMX Simulator* is one of those all-time classics. You view a variety of different BMX courses from above and control your perspicacious pedaller in a race, either against the computer or another human opponent. Push the joystick left or right to steer, and press the Fire button to pedal – and that's it. It sounds simple, but with a variety of obstacles to negotiate – such as jumps, hay bales and banking – it's not as easy as it first seems. Graphics are great, sound is functional, and the playability is excellent.**

***Grand Prix Simulator* follows the same principle of action viewed from above, but this time the graphics are less impressive. The car sprites are tiny and lacking in detail, with only a small white blob to help you tell the front from the rear. Start playing, though, and the graphical limitations are forgotten.**

The cars travel at breakneck speed and oversteer round the bends like Ayrton Senna on acid. You need ultra-fast reactions and many hours spent getting used to the control method before you can start racing properly, but once you do, a human vs. human race is guaranteed to end either in helpless laughter or a punch-up. Years old it may be, but *Grand Prix Simulator* is terrific fun.

Codemasters takes a lot of stick, for its game names if nothing else, and while none of its games are remotely 'professional' and are 'simulators' only in the loosest possible sense, apart from the odd dog they invariably give an excellent fun for £ ratio. And at just £2.99, *Quattro Sport* gives more fun than most.





• BMX Simulator– *classic cycling fun.* Grand Prix Simulator *poor sprites, great game.*

C64

MORE NUMBERS

Continuing our theme of giving you little programs to write while we play about with numbers (you may recall the dissertation on palindromic numbers last week), this week we're going to look at the theory of the so-called 'Hailstone' numbers. This is a trick that can be applied to any number with an end result that will always be the same.

You start with any positive whole number. If it's even, then divide it by 2, but if it's odd then multiply it by 3 and add 1. Keep on applying the same rule to the new numbers that are generated, and eventually you will end up with the number 1.

Having written your computer program to do all this hard work for you, try 'Hailstoning' the numbers 26, 27 and 28. They all end up as 1, although it takes a while for the number 27 to get there – but can you find a number that doesn't return to 1?

A QUICK RENDEZVOUS

One of my all-time favourite science-fiction books is *Rendezvous with Rama*, from the pen (or, more likely, word processor) of Arthur C. Clarke. So, when Telarium released an adventure game based on the book, I was a bit worried about whether the game would do the book justice.

Very early on in the game there is an excellent feature, and my worries were cast aside. At the start, if you go east, north and north again to the Bridge, and then 'examine the viewport', one of your companions asks if he should use autopilot to land your ship. Answer Yes, and you land, but answer No and you are playing an arcade game to try to land the ship yourself. A good idea. Other companies take note!

DO IT YOURSELF

Is it safe to mention the Commodore 128 here? Of course it is, and owners of that particular beast might be interested in a book called *Commodore 128 – Troubleshooting and Repair*. It is a guide to sorting out any hardware problems that might inflict themselves upon your computer. If you're the sort of person who thinks solder belongs in the army, fear not, author John Heilborn writes for all categories of electronic experience, from the complete novice to the seasoned professional, and gets his information across in an easy and amusing way. A good buy (you might make a few bob repairing computers!), it's published by Howard W. Sams & Company, and the ISBN is 0-672-22554-9.

LET'S POKE AGAIN

We're talking infinite lives here, and as with the last couple of weeks these are all for cartridges that can start a game up without a SYS number. So, for *Cobra* from Ocean, POKE 13506,173. For *Jack the Nipper II* from Gremlin Graphics, POKE 51114,173. And for *New Zealand Story* from Ocean, POKE 29758,173.

Pete Gerrard

QL

NEW WP FROM DP?

Some time ago Digital Precision (DP) announced that it had developed the largest word list anyone had ever put on the QL, but was a little tight-lipped about what it was going to be used for. By asking around, and putting two and two together (and probably making five), I have decided to stick my neck out and concluded that DP is working on the word processor to end all word processors – as far as the QL market is concerned at any ratet.

Word processors (as opposed to the text editors used by programmers) that are already available for the QL include: *Quill*, part of the Psion package supplied with every QL; DP's *The Editor*, written by the redoubtable Chas Dillon; and Fred Toussi's *Text87*.

Quill is very user-friendly and fine for short letters and the like, but I have found it quickly runs out of steam when you are working on documents of any real size.

The Editor is nice and fast, flexible, and can certainly handle large documents, but it doesn't give the user a true WYSIWYG (What You See Is What You Get) display.

Text87 is fast, extremely comprehensive and does have a WYSIWYG display. I believe that German, French and Italian versions are now available.

DP's new word processor will therefore have to combine the best features of all three of the existing products if it is to succeed in this by no means wide open market – difficult but not impossible with that word list to build on

HULL GROUP

QUANTA co-founder Leon Heller has just moved up to Hull. The natives are friendly, he tells me, and a small but enthusiastic QL group has been meeting there for some time. The next meeting is at organiser Tom Mould's abode, 141 Spring Bank, Hull, on 23 August at 19:30. Telephone Tom on Hull (0482) 212184 for more information.

Incidentally, Leon was pleasantly surprised to find that a colleague at his new place of employment, at an adjacent desk in fact, also had a QL – quite a coincidence!

TERM

Many QL users with amateur radio licences use their systems for packet radio – high-speed two-way data transfer, usually on the 144MHz VHF band. While a program of the type used for communication with an ordinary modem is reasonably satisfactory, a dedicated packet radio program makes life a lot easier, especially if it is free!

Such a program is *TERM*, a comms program specifically for packet radio written in Lattice C by Paul Hounslow, G4YFE. Paul has generously placed the program in the public domain. One amateur packet radio fan I know speaks very highly of it. *TERM* is available from Siskin Electronics on Microdrive or 3.5-inch disk. Siskin is on (0703) 207155.

John Torofex

BBC

SEE THE WORLD

World Map Study is yet another program from ESM, publisher of *Frieze* and *Kaleidoscope*. However, *World Map Study* is a more modest affair aimed at teachers of geography and sociology. It is a database of facts about populations, GNP (Gross National Product), health statistics and so on.

The novel thing about *World Map Study* is its interface, which actually makes a map of the world your jump-off point for further exploration. You move a pointer and click your mouse/hit return to view various tables. Graphs are also available, either as histograms or plotted on the map just like an oldfashioned atlas – remember them?.

An editor/creator program is part of the package, for entering your own data sets. You could create your own geographic trivia quiz for example.

KLAX SOUNDS

Klax from Domark Ltd, is a cross between *Tetris* and *Connect Four* and the a very addictive action puzzle game based on a simple idea. You control a paddle which moves left and right at the end of a conveyor belt to catch coloured tiles and load them into baskets. Each basket can contain a pile of five tiles.

The object is to connect three or more tiles of the same colour in a row in any direction – called a klax. Once created a klax disappears, leaving a gap. This sometimes causes chain reactions which really rack up the points. Drop too many tiles or fill the baskets and the game ends.

Andrew Brown

ARCHIMEDES

DONATIONS WELCOME

As well as publishing the well-produced and informative magazine *Archive*, Norwich Computer Services continues to expand its range of shareware and careware disks. Both sets are popular, but the careware series is particularly noteworthy as donations go, not to the program authors, but to registered charities supported by NCS. So successful has the series been, that NCS has recently widened the range of charities supported to spread the ante around a bit.

The latest additions to the series, all at £3.50 per disk, are careware disk 8 and shareware disks 30, 31 and 32. They contain a goodly mix of useful and interesting bits and pieces. Disk 8 starts by offering an educational word processor for children aged 5 and over, and a 256-colour painting program from Italy. Neither of these are written for RISCOS, but both run from and return to the desktop without trouble. The demos directory offers versions of *Life*, *Demons* and *Fast Grow*. The latter two are variants on the *Life* theme.

Games include a version of *Breakout* which plays in an icon on the icon bar (silly or what?) and an Arc version of patience. The music directory contains a series of tune folders and an application called *Elevator*, but perhaps the most interesting collection is in the utilities directory. Here we have a text file convertor to *1st Word Plus* files, a bulk disk formatter, a nifty disk label printer, a line editor, a movable menu bar, 01 code convertor and an RMA manager.

I've listed the contents of the disk in full because it's worth bearing in mind that a similar set might be split between several disks in other libraries. These disks really are full. Briefly, the shareware disks contain:

30 – *Soundtracker* music sequencer with sample files

31 – Editor, graph plotter, *Desk Duck* and others, *Secret Garden* and *TaiPei* (Ma Jong), DOS file readers, cursor controllers and other goodies

32 – Graphics file convertors for TIFF and GIF, among others, and heaps of line art.

BIG MAC TO GO

I'm slowly closing in on further news of the Mac emulator mentioned a couple of weeks back. It appears there may actually be two products from different sources. One would indeed be an emulator, which would run in an Arc window, while the other may be a podule containing a 68000 and space for Mac ROMs. The second company is also said to be working on a 286 PC podule. Since the demise of Mach, which was offering a very cheap 286 add-on, £199 as I recall, other developers who shelved the project are getting interested again.

FILE TRANSFER

There are two products now offering low-level support for disks from other machines, particularly IBM PCs. I haven't seen either, but they would make a good head-to-head review.

The first is *MultiFS* from Arxe Systems (081-534 1198), the people who are still trying to bring you a Spectrum emulator. *MultiFS* has rather more widespread application than the Spectrum emulator and supports both MS-DOS/TOS filing and the standard BBC Micro DFS. It works with hard disk partitions as well as floppy drives.

The product from Minerva (0392 437756), *Access*, does much the same for PC and ST disks, but has no DFS capability. Both programs enable you to treat the alien formats just like Arc disks, using ADFS-like commands to copy files, format disks and display directories. They compare very well on price, too, with *MultiFS* costing £36 and *Access* coming in at £39.95.

DOUBLE BOUNCE BLUES

I find the Archimedes keyboard quite serviceable, though not up to the standard of true IBM PCs which have separate key switches for each key. It happened that my wife needed to use it for the first time the other day, when her portable went up the spout.

Sue's a semi-touch-typist, by which I mean she went through the lessons and has fingers quite a bit faster than the Carrot digits. She found the Arc keyboard quite unusable because of 'double bounce' (keystrokes registering twice), particularly on the space bar.This meant she had to keep going back over her work and editing text.

I haven't heard of this problem with the Arc before – how widespread is it?

Bertrum Carrot

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MAN. TALLY	MT 81	130/26	104
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PANASONIC	KXP 1592	216/45	255
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CITIZEN	PRODOT 24	200/60	369
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MONO VGA	PHILIPS	BM 7749 FST	12"	107
MONO VGA	SAMSUNG	ML 2611	12"	81
MONO VGA	SAMSUNG	ML 4571	12"	95
MONO A4 (includes card and software)	SAMSUNG	MP 5671	A4	634
CGA	PHILIPS	CM 8833	14"	199
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PC

AUTUMN COLLECTION

Amstrad has a wide range of new PC products lined up for the end of this year and the start of next, if a report in the trade journal *MicroScope* is accurate. According to the magazine, which has in the past been known to put about rumours to test Amstrad's response, the company is readying 'more traditionally styled' 8086, 80286, 80386 and 80386SX PCs for a launch in September.

By 'more traditional', we're presumably looking at three box, metal-cased machines with conventional expansion slot arrangements, though the stick-it-all-on-the-motherboard design is likely to be retained, since it's a lot more cost effective.

The most surprising part of the report is that Amstrad is likely to sell the new 8086 machine alongside its current offerings, the PC 1640 and the PC 2086. If the 386SX box is is targeted at just under £1,000 – a strong rumour – what price the new 8086? It would be difficult to price all three as distinctly different machines. The answer, it would seem, is to bundle software with the two older models. How about Lotus *1-2-3* with the PC 2086 and *LocoScript PC* with the PC1640? Price cuts also seem to be in the offing.

An SX box at around £1,000 would again set the Amstrad cat firmly among the clone pigeons and could sink another nail into the 286's coffin. A September launch would tie in with the Business Computing 90 Show, for which Amstrad has already signed up.

More rumourish still are two other machines supposedly on the Amstrad stocks. A notebook sized portable with VGA screen and hard disk is aimed at the last remaining area of the portables market and a small footprint, Mac style, PC is also said to be Alan Sugar's personal project.

AUTODESK ANIMATION

What a perfect excuse. AutoDesk, the company behind *AutoCAD* and *Animator*, is moving offices, to a swanky new suite in Guildford. AutoDesk is keen to let its customer base know of the move, but never one to let an opportunity slip by. What does AutoDesk have in *Animator*? – one of the best graphics and animation packages currently on the PC. To emphasis the point, therefore, they've included a 1.2Mb disk with their change of address card.

The disk contains over a megabyte of screens and animation slides which show the three chevrons of the AutoDesk logo walking off to their new building, with a digitised shot of the offices completing the presentation. It will only run on a VGA screen. This is all very impressive, but does lead you to the conclusion that you need a lot of disk space and a fast PC to produce an animation of any length.

AutoDesk's new address is Cross Lanes, Guildford, Surrey GU1 1UJ, and the telephone number is 0483 303322.

POSTSCRIPT CARTRIDGE

One of the promised innovations for the Hewlett Packard LaserJet III printer was a plug-in cartridge to convert it to a PostScript printer. This has now arrived and is a sound product. It plugs into the left-hand cartridge port at the front of the LJ III or the IIP and produces a sample PostScript page at switch on. From then on, you can happily print straight PostScript to the device and the LJ simulating an Apple LaserWriter.

The cartridge provides a full Adobe version of the language, none of the clones from HP, as you might expect. It contains the full 35 Adobe fonts, including the oddly named Dingbats – has anyone ever found a suitable use for a Dingbat that doesn't involve scissors or a telephone? *(Yes, we use the square and circle dingbats all the time as blobs and end markers – Dep.Ed.)*

It's also impressively fast for a hybrid printer, with the most notable speed-up in the time it takes to return control to the calling program.

A complex print-out may take longer to churn from the bowels of a PostScript machine than the LaserJet equivalent, but you can continue work up to three times as quickly. And that's what counts.

The major drawback must surely be the fact that you have to turn the printer off and insert or extract the cartridge to convert it from one mode to the other. The attraction of a dual-standard printer is in being able to print in either mode with the upmost simplicity.

A wait of two to three minutes and a power-down between documents doesn't fulfill the description. Couldn't we have had a simple toggle switch on the end of the cartridge?

That said, the discount cost of a LaserJet IIP – around £1,000 – and the cartridge at £564, say discounted to £400, could give you a PostScript printer for under £1,500.

Even Apple's new personal PostScript LaserWriters don't approach that – and they are limited to only printing PostScript.

AMSTRAD CASE RESULT

You might remember from a couple of issues ago the Amstrad not-quite-LIM EMS-driver case.

One particular memory function wasn't implemented on Amstrad 2286 machines, causing one firm's software to fall over. As Amstrad had advertised the computer as fully LIM 4.0 compatible, the firm sued.

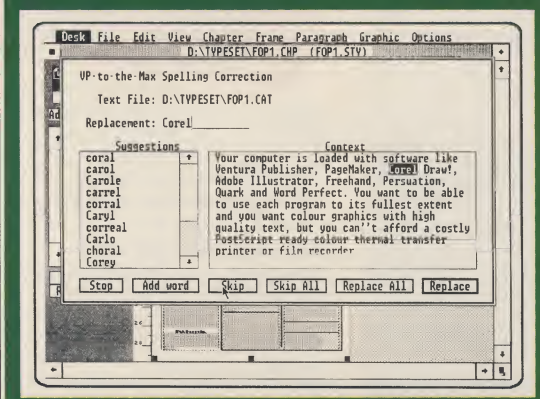
The judgement went against Amstrad, which was given a small fine.

It is advising its dealers not to use the promotional literature advertising LIM compatibility and is working on a revised memory driver to overcome the deficiency.

The new machines outlined earlier will not have the LIM problem.

Simon Williams

VENTURA HELPS THE WAY


Desk File Edit View Chapter Frame Paragraph Graphic Options
D:\TYPESET\FOP1.CHP (FOP1.STY)
VP-to-the-Max Spelling Correction
Text File: D:\TYPESET\FOP1.CAT
Replacement: Corel
Suggestions
coral
carol
Carole
carrel
corral
Caryl
correal
Carlo
choral
Corey
Context
Your computer is loaded with software like Ventura Publisher, PageMaker, CorelDraw!, Adobe Illustrator, Freehand, Persuation, Quark and Word Perfect. You want to be able to use each program to its fullest extent and you want colour graphics with high quality text, but you can't afford a costly PostScript ready colour thermal transfer printer or film recorder
Stop
Add word
Skip
Skip All
Replace All
Replace

For long a proponent of all things *Ventura*, Nigel Grant at the Ctrl Alt Deli has just introduced three new products for the top-flight DTP. *VP to the MAX* (£149) introduces a spelling checker, thesaurus, search and replace and a style sheet viewer, all working from within the *Ventura* GEM environment. Although the word lists of spelling checker and thesaurus are in American English, the program offers a 116,00 word dictionary and 470,000 synonyms. You can add you own words to the word lists. The style sheet viewer shows all relevant details of any style sheet on disk, again without your having to leave *Ventura* to do it.

***VP Manager* (£115) handles the many files *Ventura* creates and can move, copy or delete whole documents in one go. As well as being able to view the contents of any *Ventura* file, you can add descriptions and search keywords, and set revision levels.**

The third product is an upgrade to an existing *Ventura* add-on, *SoftKicker* (£69.95). This is a display enhancer that lets you view part of a *Ventura* screen as if it were being run on a much higher-resolution monitor. It makes working with *Ventura* an awful lot easier and the latest version contains four main improvements. The magnified view box, which was previously fixed and of a fixed size, is now resizable and may be moved anywhere on the screen. A press of the right-hand mouse button returns the mouse pointer to the menu bar. *SoftKicker* and *DesqView* can now live happily together and *SoftKicker* can be programmed to take an automatic back-up of a *Ventura* document at a pre-determined interval.

BREACH 2

PC GAME of the WEEK

Impressions • £24.99

The dividing lines between games of adventure, strategy or role-playing are becoming blurred. Text adventures have all but disappeared, replaced by 'point and click' graphic adventures such as *Deja Vu II*. Meanwhile the combat sequences of a role-playing game like *Ultima VI*, where each member of the party can be individually controlled, bear comparison to a full-blown strategy game. *Breach 2* takes this one step further.

***Breach 2* is far smaller than *Ultima VI*, but contains many of the same elements. Rather than one hugely involved plot that takes months to unravel, *Breach 2* offers 10 simple scenarios, some only taking 20 minutes. Rather than one gigantic map of millions of locations, *Breach 2*'s scenarios are acted out in a 50 by 50 grid.**

You are in charge of a team of marines each governed by the usual role-playing factors of vitality, health, shooting accuracy and so on. You have been set down on a hostile planet to perform a mission that may involve overcoming enemy positions, fighting off monsters or rescuing prisoners. There is a colourful scrolling map, but it only shows the areas actually visible to your men.

Much of the excitement is in the exploration, which means that once you've explored all 10 scenarios the game becomes rather less attractive. However there is also a Scenario Builder where you can create your own worlds and write your own plots. The only problem we had was with the mouse, which tended to dart unpredictably across the screen. Thankfully it can also be played from the keyboard.

The most exciting aspect of *Breach 2* is IGS. Standing for 'Interlocking Game System', this allows any supported game to link to any other in a totally seamless fashion. *Rules of Engagement* is the next title due to support IGS, and includes combat sequences where the player can enter special *Breach 2* scenarios, resolve the conflict and then return to the main game. Sounds quite revolutionary.

Matt Nicholson

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The *weekly* computer market place for people *serious* about buying

● THIS WEEK'S BUYERS' GUIDE

SOUND ESSENTIALS

The best software for MIDI, sampling and composition

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We have the most advanced product in the emulator market for the Atari ST and Mega ST

With the growing demand for better and faster PC emulations to use within the ST framework, the Vortex AT once runs at a fantastic Norton Factor of 6.7. That is around 50% faster than a standard V30 based emulator.
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THE SHOPPING EXPRESS GUIDE TO SOUND

SAMPLERS, SEQUENCERS AND INTERFACES

Computers can be of great help to musicians. As well as making noises from their own loudspeakers, musicians can sample sounds and replay them, or control a synthesiser via a MIDI connection.

The borders between music and software are becoming more blurred with each passing year, as music companies invest in both hard and software companies. The industries are working hand-in-hand to produce an ever wider range of products. Indeed, the choice is baffling and growing larger month by month To some extent, of course, the choice of software and its possibilities are marked out by the computer that you choose to run it on. Now *Express* gives you a comparison of the major computers, followed by a comprehensive run down of the best software available across the board.

COMPUTERS

● ATARI ST SERIES

▲ Built-in MIDI ports
▲ No compatibility problems
▲ Large software base
▲ Not expensive

▼ Some programs require hi-res screen
▼ GEM environment can be slow
▼ Internal sound chip not very good

● COMMODORE AMIGA SERIES

▲ No MIDI compatibility problems
▲ Excellent internal sound chip
▲ Stereo output
▲ Multi tasking

▼ MIDI interface not included
▼ Software base not so large yet

● PC

▲ Large software base

▼ MIDI compatibility problems
▼ Poor internal sound chip
▼ interfaces relatively expensive

● ARCHIMEDES

▲ Excellent internal sound chip
▲ Very fast processor
▲ Multi-tasking
▲ New models have built-in MIDI interface

▼ Small software base

SEQUENCERS

Perhaps the most widely available type of software. MIDI sequencers come in all shapes and sizes from the public domain to the bespoke facilities. The usual mark of excellence is ease of use coupled with hosts of labour-saving musically intelligent routines. Hopefully it will also be able to save in MIDI file format so that work on one sequencer can be transferred to another without tears.

● CREATOR

FOR Atari ST series
FROM C-Lab (Sound Technology): 0462 480000
PRICE £285

Becoming the most used of sequencers it has excellent editing and arranging features. Although not cheap, if you are serious about music then this is the one to go for. Hardware expansion to control up to 64 instruments independently

▲ Excellent facilities
▲ MIDI file compatibility
▲ Will also adapt to video sync
▲ Good editing

▼ Handbook can be difficult
▼ Expensive if you are not serious

● TRACK 24

FOR Atari ST series and Amiga
FROM Comus/Soundbits: 021 733 2063
PRICE £75

Well priced budget sequencer with more features than you would expect, rivaling software twice it's price. Compatible with more up-market sequencers and scoring packages.

▲ Cheap
▲ Good sequencing facilities including Mixdown
▲ MIDI File

▼ Editing is peculiar

● STEINBERG PRO 24

FOR Atari ST series and Amiga
FROM Evenlode: 099 389 8484
PRICE £285

The Steinberg Pro 24 has been the industry standard for many years. The soon-to-be-available Amiga version should prove interesting, if all the rumours are true. They are pushing their new program 'Cubase' at present but one should not neglect this easy to use and very popular program. Make sure you get at least version 3 though.

▲ Easy to use
▲ Established program
▲ Easy editing

▼ Price

● VIRTUOSO

FOR Atari ST series
FROM The Digital Muse: Audio Software: 071 586 3445
PRICE £225

A new all British program having it's first outing this year. Initial reactions are very good and the program has, indeed, many things in its favour. It has all the features that are available on much more expensive packages and, yet, the Virtuoso still remains quite easy and friendly to use.

▲ Very fast - thanks to re-writing of screen management
▲ Very accurate
▲ Can perform disk operations while still running
▲ Many excellent features

▼ New and therefore untested in the general market
▼ Price

● K.C.S. 1.6

FOR Atari ST Amiga, Mac and PC
FROM Dr T: 071 258 3454
PRICE £199

Dr. T programs, are nearly all made to run in a Multi Program Environment, which means that you can work on several of them simultaneously. KCS runs on 48 tracks, has loads of features and is the most popular sequencer from the range. It can also be upgraded with add-on programs to enhance editing features. What is more the KCS can be enhanced as far as music printing goes as well.

▲ KCS is a very well established program
▲ Upgrades and works with other software
▲ MIDI file

▼ Editing not easy

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● M.R.S.

FOR Atari ST, Amiga,
FROM Dr T: 071 258 3454
PRICE £59

The MRS is a low cost eight track sequencer that provides a decent introduction for the beginner. It has a few quirks in its operation, like defining song length from the length of track one. Generally, however, this has quite generous facilities. Indeed, the Amiga version will support the internal voices.

▲ Easy to use
▲ Low cost
▲ Can be upgraded to KCS
▲ Well documented

▼ Has a very laborious editing facility, that slows it down
▼ Has a few peculiarities

● SUPER CONDUCTOR

FOR Atari ST
FROM Microdeal: 0726 68020

This is a very popular little sequencer that will control the ST sound chip. It has been extremely well thought out, especially in the song arrange section. Can also cope with the fine details of MIDI including systems exclusive editing.

▲ Suitable for beginner
▲ Easy arrange section
▲ Well documented
▲ Controls internal sound chip
▲ Good if you want to control MIDI via data

▼ Editing not too easy
▼ Quantize limited

● WADDINGTON SEQUENCER

FOR Atari ST
FROM Public Domain
PRICE about £2

Canadian 64 track sequencer. Although limited in facilities like quantize and editing it is nevertheless a real bargain.

▲ Costs next to nothing
▲ Excellent introduction to MIDI
▲ Easy to use

▼ Limited facilities
▼ Can crash on occasions

● EZ TRACK PLUS

FOR Atari ST
FROM Syndromic Music: 081 444 9126
PRICE £49.95

This is a reasonable sequencer that is fairly easy to use. It is compatible with other Hybrid Arts programs that also boast a multi program environment. Limited on quantizing but not bad for the money. Editing in data only but good for organising songs.

▲ Good price
▲ Easy to use
▲ Compatible with Hybrid Arts EZ Score

▼ Unfortunately, limited on editing and quantizing

● STUDIO 24 MK 1

FOR Archimedes
FROM EMR: 0702 335747
PRICE £99

The cheapest sensible sequencer for the Archimedes. Cuts a few corners here and there but is not a bad sequencer with average editing facilities.

▲ Best for the Archimedes in this price range
▲ Can be upgraded to more powerful Mk2
▲ Very fast

▼ Poor documentation
▼ Editing of data non-graphic

SYNTHESISER VOICING SOFTWARE

One of the great boons of MIDI, especially with the complex multi-timbral synths/tone modules that are on the market. You are able to see the set-up on-screen instead of labouring over a LCD, which allows you to create sounds easily. Additionally, many programs have automatic voice generation to help with creating new sounds.

● CZ ANDROID

FOR Atari ST
FROM Syndromic Music: 081 444 9126
PRICE: £75

The most useful program to get if you have any of the Casio CZ series synths. On their own they are pigs to program and the preset sounds are rancid; use this and your CZ will never sound the same.

▲ Easy to use
▲ Excellent graphics
▲ Good library facilities

▼ Can't really think of any!

● 3D PROGRAMMER

FOR Atari ST
FROM Soundbits: 021 733 2063

This is a smart piece of software that not only covers the Roland D110 but also covers the keyboard versions D10 and D20.

▲ Easy to use
▲ Configures a very difficult instrument

▼ Roland's version of D110 may not work with it (or any other software for that matter!)

● X-ALYSER

FOR Atari ST
FROM C Lab (Sound Technology): 0462 480000
PRICE £175

Very intelligent voicing program for the DX7 synth. It has a built in conversion to MIDI sample dump in order that the sound might be replayed from the sampler directly.

▲ Very easy to use
▲ Good library facilities

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▲ Sample dump
▲ Use of graphics

▼ Price is on the hefty side

● SYNTH LIBRARIES VARIOUS

FOR Amiga, ST
FROM Public Domain
PRICE £2.95 approx.

It is worth noting that there are various public domain programs that will voice the most popular synths; e.g. DX7, CZ series, as a cheap cheerful introduction - they could well be your best bet.

▲ Price
▲ Usually have a set of new voices for your synth
▲ Sometimes have random voice generation

▼ Sometimes fail for no apparent reason
▼ Editing not always available
▼ Editing is nearly always numeric and not easy to understand

SAMPLERS

Samplers is another growth area for computers. In fact, the public domain market is full of samplers of all sorts, from well worn rock numbers to Thunderbirds! However to actually digitise sound you will need hardware and this is where the expense comes in. The main points to remember are that editing needs to be clear and easy, sounds should be able to be filed away to be re-used in other utilities and MIDI support is certainly a must for the serious user.

● FUTURESOUND 500

FOR Amiga
FROM HB Marketing: 0895 444433
PRICE £89.95

Very clean and clear sampling with good editing facilities.

▲ Easy to use
▲ High quality sound

▼ No MIDI
▼ Cost

● A.M.A.S.

FOR Amiga
FROM Microdeal: 0726 68020
PRICE £75

Quality sampling plus MIDI interface.

▲ Clean samples
▲ Comes with MIDI interface
▲ Well organised program

▼ None, unless you think it is too expensive

● PRO SOUND DESIGNER

FOR Amiga
FROM Eidersoft: 0234 273000
PRICE £75

If you get the 'Gold' version, you will get a far superior program. MIDI is included but the interface is extra.

▲ Clean sounding samples
▲ Has many on-screen features

▼ MIDI interface is extra

● I.S. DIGITISER

FOR Atari ST
FROM Innovated Software: 0903 213614
PRICE £69

A sampling package with the options of buying extra software for MIDI and/or clever wave form displays.

▲ Very high sampling rate
▲ Good filters
▲ Program can be expanded

▼ MIDI not in original program
▼ Could be costly

● REPLAY 4

FOR Atari ST
FROM Microdeal: 0726 68020
PRICE £59.95

One of the first sampling packages not in it's fourth version. Earlier versions available on Public Domain as sample players only. MIDI well looked after.

▲ Editing very easy
▲ Samples sound very clean
▲ Tried and tested program

▼ The ST is not the best sample player.

● SAMPLER

FOR Archimedes
FROM EMR: 0702 335747
PRICE £126.50

Has all the funtions for sampling plus the of the computer to make them very clean 8 bit samples.

▲ Fast
▲ Many good features
▲ Very smooth samples

▼ Price

MULTIPLE PURPOSE PROGRAMS

The 'all talking, all singing, and all dancing' section. These are programs that cross over from having just one dedicated function. In the case of Music-X you have a complete music studio under one roof. The rest are mainly for fun (but what's wrong with fun anyway?) although some serious work can be done on them.

● MUSIC-X

FOR Amiga
FROM SDL: 081 309 0300
PRICE £199.95

The best package in the market. It has every feature you could ever conceivably want. MUSIC–X will program synths, organise and store the MIDI data from anything and sequence in a very professional class. This package singlenotedly establishes the Amiga in the music market.

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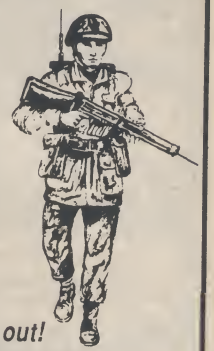

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● DELUXE MUSIC CONSTRUCTION KIT

FOR Amiga
FROM Electronic Arts
PRICE £49.99

MIDI output, sample playing plus a sequencer.

▲ Comprehensive package
▲ Well tried and tested

▼ Sequencer uses all of the traditional notation
▼ A bit slow in operation

● MUSIC STUDIO V. 3.0

FOR PC, ST and Amiga
FROM Activision: 0734 311666
PRICE £29.95

Has wave form editing, MIDI in and out and output. But, the versions differ in sound quality.

▲ Comprehensive program
▲ Price

▼ Uses traditional sequence notation

SYNTHESISERS

As mentioned earlier, at the beginning of this piece, the quality of sound does depend on the computer at your disposal. In truth, only the Archimedes and the Amiga are serious contenders for real sound synthesis at present, although Atari is attempting to fix this with the STE. Future computers will doubtless go even further down the road to having a synthesiser tucked under the housing. As a mark of just how far this is going, PC owners can actually now buy synthesizer cards from the likes of Roland. Indeed, it would not be unwarranted to expect a large growth in this field soon, moving away from just replaying sample files towards a more active music synthesis with your computer, and of course, with your ear.

● SOUND GENERATOR

FOR Atari ST
FROM Public Domain
PRICE £2.95 approx.

About the best you can get for the ST's miserly sound chip with on-screen sliders to alter the tone.

▲ Price
▲ East to use and understand

▼ Limited value
▼ Fun only program really

● SONIX

FOR Amiga
FROM HB Marketing: 0895 444433
PRICE £56.48 but often cheaper

Actually lets you draw and/or create your own sounds imitating a real synthesiser. Has other features built in.

▲ Good sound quality
▲ MIDI functions
▲ Can file away sounds

▼ Price

● SOUNDSYNTH

FOR Archimedes
FROM EMR: 0702 335747
PRICE £49,95

Good all rounder with fast display and waveform drawing facilities.

▲ Sounds can be filed for use in other programs
▲ Very fast and accurate
▲ Good display

▼ Only works on samples sound, not synthesis from scratch

● INSTANT MUSIC

FOR PC, ST and Am iga
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ST506 Hard disk podule for Archimedes 310. Also external hard drive or internal. If fitting assistance offered. Tel (0282) 602836 (Lancashire) will collect cash!

FLOPPY disc drive for Commodore 64 in working order but must be cheap and tapes construction games and any other going cheap (I'm unemployed). Mr Drew Maxted, 22 Birch Gardens, Sandbach, Cheshire CW11 0HB.

AMIGA Format (+ disk) issue 4 needed to complete collection. Will pay £2.95 + postage or exchange other mags? Phone Andy on Elgin (0343) 541127 evenings.

WANTED music and graphic demos for Amiga also some to swap. Ring Mick 051 263 0361.

WANTED 3-slot mother board for CBM/64/128 must be switched, preferably made by Datel. Will pay up to £20. B F O'Donoghue, 5 Westmorland Terrace, Hawthorn Grove, Penge, London SE20 8LG.

WANTED SM124 monitor plus serious software must be cheap or will swap original software (ST games) Phone (0289) 308820.
5 Osborne Place, Tweedmouth, Berwick.

ST1040 or 520STE swap Amstrad 1512 640K very good condition also wanted M/C on your ZX81. (0344) 868146. Flat 119 Mount Pleasant, Mount Lane, Bracknell.

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HELP can anyone supply me with a full back-up copy of ST Format disks 2 and 3. Mine have bust disks returned only with SAE. N Evans. 13 Winton Road, Cheltenham GL51 5AX. (0242) 237687.

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WANTED any home grown software or demos etc. Negotiable fee ranging from £1 to £100. Per kilogram. Please send SAE, disc to 1 Ryelands Place, Kilgetty, Dyfed SA68 0UX.

WILL swap Amiga PD for any fish disks. Particularly want 24, 50, 78, 118, 229, 252, 254, 273, 202, 34, 30! Phone Jim on (0524) 33553.

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WANTED Battlehawks 1942 Atari ST. Swap my updated version of FOFT and Millenium 2.2. P. Heighton, 12 Plessey Street, East Hartford, Cramlington, Northumberland.

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● PERSONAL

SCIENCE on your micro? If you use your micro for any science, astronomy, zoology please write. Iain Stewart, 17 Torry Drive, Alva, Scotland, FK12 5NQ.

ST user seeks people interested in Atari art, music and programming. Write to Jamie Branson, 6 Swindale, Wilnecote, Tamworth, Staffs, B77 4LD.

WAYNE needs help. Anyone in the know out there who can recommend good books or programming the Amiga. Contact Wayne, 50 Farren Road, Longbridge, Birmingham, B31 5HP.

I would like to get in touch with anyone 16-18 with an IBM PC or compatible. Michael Marshall, 48 Sunnyhill Road, Herne Bay, Kent, CT6 8LU.

AMIGA and Atari ST 68000 coders wanted to swap hints & source code. Write to: Steve, 1 Clarkes Field Close, Brill, Bucks, HP18 9SP.

XENIX bods wanted to help write and compile a new multi user BBS. Write to: 39 Tetbury Drive, Warndon, Worc, WR4 9LG. EMAIL 0905 754127 VOICE 53248.

WANTED pen pals/Amiga contacts; Cyprus/Middle East. Contact John Walters, 17 Frederick Street, Seaham, County Durham, SR7 7HX. All letters answered.

48K Spectrum owner? Into football? Aged 11-15? Want to swap tips, demos? Reliable? Write: Robert Jackman, 3 Albion Terrace, Lexham Road, Litcham, Kings Lynn, Norfolk, PE32 2QQ.

AMIGA contacts wanted. All welcome. Overseas especially welcome. Also anyone know of any user groups in Hackney area. Contact N. Tierney, 5 Campion House, Mayville Est, Matthias Road, London, N16 8LN.

BIG hi to all the dudes in Crystal Unicorn. Thanx for making these six months so good. See you all at EECS. From Wizzworld Productions.

WOULD Robert Hudson please phone (06973) 31759.

● ANNOUNCEMENTS

SAM Coupe newsletter coming this September. Competition in issue #1!! For more details send SAE to: SAM Coupe, C/O Stirling, 23 Mayfield Street, Glasgow, G20 9RQ.

I'M putting together a series of scanned IMG Clip Art discs for the ST and need more scans - straight swap. Phone John on 081 546 0993.

AMOS contacts wanted. Do you have any good tips, programs or subroutines that you are willing to share? If so contact Norm, 5 Campion House, Mayville Est, Matthias Road, London, N16 8LN.

● USER GROUPS

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AMOS users: I'm interested in code swapping or ideas from other programmers (STOS as well for that matter). Mike (London) 071 820 9204

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WANTED "Waterloo" and "Tracksuit Manager" for IBM/PC - must be on 3.5" disks. Tel: Woking (0483) 764857.

WANTED Mac Plus and hard disk or Mac SE or Mac 2. Write - Winfield, 244 Ringwood Road, Totton, Southampton, SO4 3EB.

WANTED Psion organiser Model XP. Must be good with manual. Model CM would be acceptable if good condition with manual. Phone (0360) 310408 after 4pm.

MEGADRIVE games wanted for cash or will swap Amiga software for them. Phone (0572) 756173.

DESPERATELY seeking ZX81 Power Pack! Also a 16K RAM Pack would be nice. And how about some ST MIDI sequencing software? Phone Steve: (0535) 273810.

WANTED Amiga copy of Defender of the Crown. Top price paid for good copy. Write: Paul Carter, 1 Birch Lane, Flaunden, Hemel Hempstead, Herts, HP3 0PT.

WANTED any LapTop 512K or over with drive (mono). Write to Mr. R. Jabbar, Unit M20, Crystal Peaks, Waterthorpe, Sheffield, Sl9 6HZ. Will pay up to £300. Phone (0742) 472411.

WANTED Word Processor (complete system). Including printer. Consider all offers.State prices/Details. Only want letter replies. Charles Trager, 7 Grantley Street, Glasgow, G41 3PT.

SUNDOG for ST wanted urgently. Phone (0204) 46211.

SEGA megadrive games wanted for cash or swap. Rates depend on game and condition. Send lists to: R. Macklin, 56 Raeburn Ave, Surbiton, Surrey, KT5 9DP.

AMIGA assembly source code wanted. Pref DevPac. Swap for mine. Send disk for answer: Kenny, 62 Carrol Cr, Ormskirk, Lancs, L39 1PZ.

WANTED MSX ROM cartridge of the game Nemesis (Konami). Will pay your price if in good condition. Tel: (0949) 32106. Dave.

HELP! I urgently need a space bar or cheap keyboard for my Amiga 500. Phone (0462) 731685 after 6pm.

MSX SFGOS cartridge or anything to make my Yamaha accept midi. Suggestions gratefully accepted. Tel: (0643) 707404 after 6.30.

WANTED original Sinclair Spectrum working or not! Microdrives etc for spare's, and repair mine. Phone Stan evenings (0206 22) 6968.

WANTED printer. 1 Meg DS-DD 3.5" drive, modem. Above must be in new condition and with manual. Tel (0222) 831560.

● PERSONAL

SCIENCE on your micro? If you use your micro for any science, astronomy, zoology please write. Iain Stewart, 17 Torry Drive, Alva, Scotland, FK12 5NQ.

ST user seeks people interested in Atari art, music and programming. Write to Jamie Branson, 6 Swindale, Wilnecote, Tamworth, Staffs, B77 4LD.

WAYNE needs help. Anyone in the know out there who can recommend good books or programming the Amiga. Contact Wayne, 50 Farren Road, Longbridge, Birmingham, B31 5HP.

I would like to get in touch with anyone 16-18 with an IBM PC or compatible. Michael Marshall, 48 Sunnyhill Road, Herne Bay, Kent, CT6 8LU.

AMIGA and Atari ST 68000 coders wanted to swap hints & source code. Write to: Steve, 1 Clarkes Field Close, Brill, Bucks, HP18 9SP.

XENIX bods wanted to help write and compile a new multi user BBS. Write to: 39 Tetbury Drive, Warndon, Worc, WR4 9LG. EMAIL 0905 754127 VOICE 53248.

WANTED pen pals/Amiga contacts; Cyprus/Middle East. Contact John Walters, 17 Frederick Street, Seaham, County Durham, SR7 7HX. All letters answered.

48K Spectrum owner? Into football? Aged 11-15? Want to swap tips, demos? Reliable? Write: Robert Jackman, 3 Albion Terrace, Lexham Road, Litcham, Kings Lynn, Norfolk, PE32 2QQ.

AMIGA contacts wanted. All welcome. Overseas especially welcome. Also anyone know of any user groups in Hackney area. Contact N. Tierney, 5 Campion House, Mayville Est, Matthias Road, London, N16 8LN.

BIG hi to all the dudes in Crystal Unicorn. Thanx for making these six months so good. See you all at EECS. From Wizzworld Productions.

WOULD Robert Hudson please phone (06973) 31759.

● ANNOUNCEMENTS

SAM Coupe newsletter coming this September. Competition in issue #1!! For more details send SAE to: SAM Coupe, C/O Stirling, 23 Mayfield Street, Glasgow, G20 9RQ.

I'M putting together a series of scanned IMG Clip Art discs for the ST and need more scans - straight swap. Phone John on 081 546 0993.

AMOS contacts wanted. Do you have any good tips, programs or subroutines that you are willing to share? If so contact Norm, 5 Campion House, Mayville Est, Matthias Road, London, N16 8LN.

● USER GROUPS

AMIGA Programmers wanted to join Artists, Musicians and Programmers to produce disks and demos for fun. Phone Ray on 021 327 5931 after 6pm.

AMOS users: I'm interested in code swapping or ideas from other programmers (STOS as well for that matter). Mike (London) 071 820 9204

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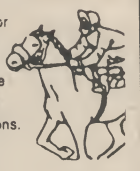

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WANTED any information on a modem called Data Plug I, built by Plessy. Manuals, pin outs etc. Glyn O Jones, 178 Crockhamwell Road, Woodley, Reading, Berkshire.

HELP desperately needed to code with Devpac 2 on the Amiga. Especially using the hardware. D. Thorne (Jnr), 26 Pinehurst Road, Anfield, Liverpool.

520STFM owner wishing to enter Comms world. All info RE software, hardware prices and general operation would be gratefully received.

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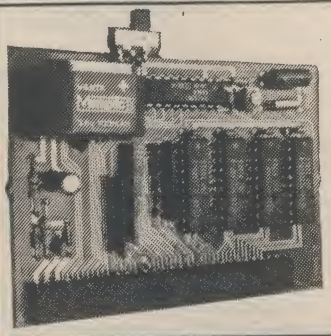

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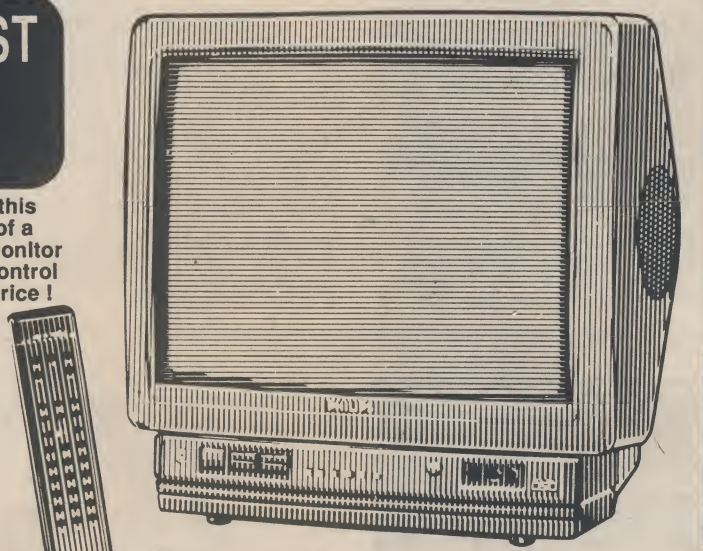

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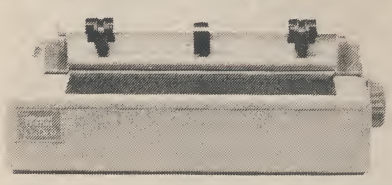

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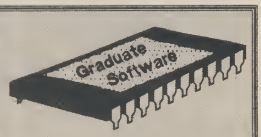

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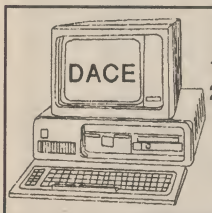

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THE PD COLUMN

There is a lot of software out there available for the price of a disk. This week Adam Waring looks at some of the software that will let you go on line – and some of the PD you can find once you're there...

Some of the best sources of public domain software are bulletin boards. Most of them are free to access and don't have copying fees. In fact all you usually need to pay is simply the cost of a telephone call.

But how do you access that software in the first place? Firstly you need a modem – a device that connects your computer to the telephone network. Just as importantly, you'll need some software to operate the modem, known as a comms package.

Of course, you could buy a commercial package – there are plenty available, but why should you? There are a whole host of perfectly good comms programs in the public domain. What better way to get hold of all this free PD with a comms program that's PD itself.

A good comms package will allow you to connect to bulletin boards, or make one to one contact with a modem owning chum. It will allow you to both receive and transmit data, and do so at a variety of different transmission speeds (baud rates).

And it just happens that I know of a few comms packages that will let you do all this and more...

ST

Vanterm is an ST comms package with knobs on. It's so comprehensive that it has practically everything you could ever wish for in a comms program. It comes with a whole host of auxiliary files, including the ever so important documentation. And you'll need it – there's so much to this program!

The program is totally controlled from the ST's GEM environment, but has the inclusion of hot keys too, so that experienced users can get where they want quickly and easily. The best thing about *Vanterm* is that it's just so easy to use, even for the complete newcomer. The first time I used it I managed to upload a file without referring to any instructions whatsoever – a sure sign of user friendliness!

It's the blend of ease of use and incredible versatility that make *Vanterm* such a gem. If you've got a modem then don't delay, *Vanterm* is a crucial to your collection. The program comes from the South West Software Library, but readers of the best selling magazine *ST Format* will find the program lurking on the free cover-disk that accompanied issue 11.

AMIGA

If the cuddly Amiga is your machine then you could do worse than try *Ncomm* from Amiganuts. *Ncomm* is the piece of software that opens a whole new world of software to your machine.

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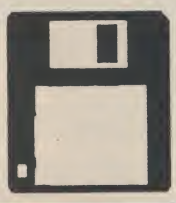

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It's very comprehensive indeed, and has everything you could wish for in a package of this kind.

It's mouse driven, but does have hot keys for many of the functions. It includes a built in phone book, so you can enter all your favourite bulletin boards and access them later with a couple of mouse-clicks.

One notable aspect of the program is that it's not PD or shareware, it's giftware. Instead of sending dosh to the programmers, if you want to keep the program (as you must do with shareware), they request gifts instead! Alcohol and chocolate seem to be amongst their favourites.

PC

Telix from KAJP Software (10 Church Road East, Farnborough) is one of the better PC shareware programs. It's Canadian in origin, so the registration fee is given in dollars. Features include virtually every imaginable protocol with which to transfer data, and lots of baud rates, though the higher ones will need a pretty nifty machine to keep up.

The program is menu driven, making it easy for beginners to use, yet it's extremely sophisticated at the same time. It's flexible too. It has a built in programming language called SALT that allows you to produce automatic sequences of many of its functions.

Help is always available to the newcomer, at the press of a key, so you won't find yourself getting lost too easily.

CPC & PCW

MEX is a shortened name for Modem EXecutive. It's a very popular CP/M comms program which operates via a command line. This allows you to carry out file manipulation tasks while the program is in operation. It's available from many sources, the principle one being WACCI, the CPC owners' club.

Being CP/M it will work on both the PCW and CPC. In fact the program has been doing the rounds for years. It was first available on all those old CP/M machines like the Osbourne, so if you own a dinosaur, you may be able to hook up too. ■

GOING ON LINE

It's all very well having your new PD comms program up and running, but it's of little use without a few bulletin boards to talk to. There are hundreds set up through the length and breadth of the country – indeed, the entire world. Most have a section covering downloadable software, usually for a variety of machines.

You'll soon find that there's far more to it than just being a convenient way to get you hands on PD software. You'll meet new friends and have a lot of fun checking out what's new on the board. Users are expected to give as well as receive, so don't expect an unlimited supply of software without sending some back in return.

Incidentally, those strange looking codes after the phone numbers are information that you'll need about baud rates and protocols.

Don't worry if you can't make head nor tail of them, all will become apparent when you get hooked up with your modem and software.

Mektronic Consultants – 061-773 7739. V21/22/22bis/23 8N1. A Manchester-based board with lots of free software. It's run by an enthusiastic computer retailer, so don't be too surprised if you're offered goodies on line!

TUG II – 0905 775191. V21/22/22bis 8N1. A well used board with a huge selection of PD. There are many other sections too. For instance, keen computer games players will also find lots of cheats and pokes to help them beat their favourite games.

Winchester Remote – 0962 69322. V21/22/22bis/23 8N1. Another general board with plenty for the PD fan. There are plenty of files to download, and many special interest areas.

Gnome at Home – 081-888 8894. V23 7E1. A very professional looking board, catering for a variety of computers. Has more that one telephone line, so several users can call at once.

This feature allows you to talk to others 'live' when you're not downloading all the free PD. It is a subscription service, but there's plenty for the browser to check out before making their mind up.

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HEAVYWEIGHT LIGHTWEIGHT

Amstrad's second attempt at a portable PC looks to the top end, and this time gets it right, finds Keith Pomfret.

The Alt-386SX is a top-end portable PC with a hard disk which costs £2,500 less than a similarly specified Toshiba. As the successor to the much-criticised PPC portable range, it represents Amstrad's attempt to launch a no-holds-barred power machine, but can the firm with a reputation for down-market products carry it off?

The machine is quite un-Amstrad like in appearance. The matt grey box has a texture like a cross between fine sand and stove enamel. It is a thousand miles from Amstrad's last sortie into the portable market, the very tacky-looking PPC range.

The clamshell opens to reveal a large, clear VGA LCD screen and a gently raked 85-key keyboard. The keyboard is surprisingly responsive for an Amstrad and a set of 12 reduced size function keys adorns the top. The cursor cluster is at the bottom on the right and all the function specific keys (Insert, Page Up and so on) are set out around the periphery.

Indicator LEDs for Caps Lock and Num Lock are grouped with a hard reset button above the keyboard. Power, battery and drive LEDs are placed on the far right in such a way that they can be seen even when the clamshell is closed..

POWER TO WEIGHT RATIO

The Alt-386SX is a true portable with a large detachable battery pack underneath. It is slowly recharged while the machine is in use from the mains, but if the machine is switched off it can be 'blast' charged in two hours. The claimed battery life is two hours, but with little disk access it managed a healthy 165 minutes.

Anyone needing more than a couple of hours of battery life could carry a second battery pack and change when necessary.

The internal battery pack and AC power supply contribute a large amount toward the portable's hefty 15.4lb (7kg) weight. This would be bearable if it wasn't for a carrying handle with all the ergonomics of the tow-bar of a 32-tonne lorry. The handle is a disaster of bad design, causing hand swapping winces after a couple of hundred yards. However, that may not be too much of a problem as most users won't be intending to carry it any further than the car.

PERFORMANCE

With a 16MHz 386SX chip, the Alt-386 has healthy performance figures and is fast enough for most applications. Underneath the cover the machine uses VLSI (very large scale integration) chips to save space, and at the heart of it all is the 80386SX. The 386SX is the little brother of the i386, differing in that its data bus is only 16 bits wide as compared to the 386's 32-bit system. It will run all 386 specific software however, and all in all makes the Alt-386SX one of the most powerful portables around. The chip is dual speed and can be switched between 8 and 16MHz.

The hard drive, a 40Mb Connors device of the kind used by several manufacturers, performed well with a short average access time of 25ms.

The screen is an Epson 640 x 480 VGA screen capable of displaying 32 colours as grey scales with a fast refresh rate giving smooth scrolling. The LCD display has fiddly contrast and brightness knobs that make adjustment awkward and there's also an invert switch that reverses the greys on the screen. The inclusion of a VGA screen ensures that almost all software will run on the Alt-386SX.

Expansion is catered for with a single 16-bit slot that will take a card of up to 155mm x 156 mm. Ports and peripheral connections are two 9-pin serial, one 25-pin parallel, a 9-pin analogue video (for a colour VGA monitor), a connector for an external keyboard and one for an external floppy drive. The on-board 1Mb of RAM can be expanded to 4Mb.

A thoughtful inclusion in the box is a set of extra keys for the keyboard to enable users in different countries to change the keys as well as the set-up.

One surprise was the lack of bundled software. The machine comes with a single manual to cover itself and the included MS-DOS 3.3. It happily ran everything we threw at it, and suffers none of the compatibility problems associated with the early Amstrads.

RIGHT ON

This time Amstrad has got it right. The design, components and specification are at least the equal of other portables in the same price bracket, and it stands comparison with considerably more expensive machines. The Alt-386SX brings the price of a power portable down low enough to attract small businesses, while retaining the features that make it so desirable to power users. ■

The Amstrad Alt-386SX cost £2,299 from Amstrad dealers. More details on 0279 454555.

• The Alt-386SX: a radical change in styling for a computer with much more power than the previous portables.

SPECIFICATION

Model: Alt-386SX
Dimensions: 380mm x 385mm x 95mm
Weight: 15.4lb
Processor: Intel 80386SX at 16MHz
RAM: 1Mb expandable to 4Mb
Display: Mono VGA LCD
Operating system: MS-DOS 3.3
Ports: 2 Serial, 1 Parallel
Expansion: 1 16-bit slot (155mm x 156mm maximum card size)
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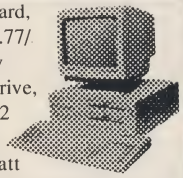

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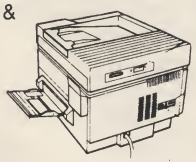

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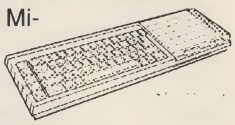

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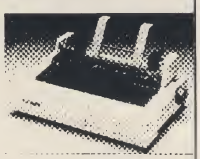

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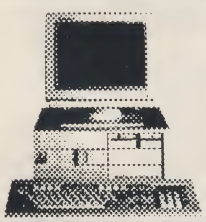

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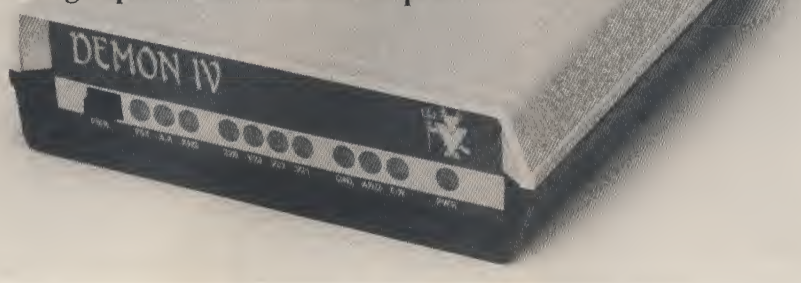
DEMON IV

The Demon IV modem offers powerful error checking as well as high speed at a rock-bottom price.



The Demon IV modem, with its 2,400 baud transmission and Level 5 MNP compression and error correction, claims to achieve transmission speeds that equate to nearly 4,800 baud. A couple of years ago a 300 baud modem was adequate. The size of files and documents to be moved was never more than a few kilobytes and in the quiet hours of the night, the wires buzzed with the squeal of 300 baud transmission at somewhere around two kilobytes a minute.

At 300 baud the contents of a high density 3.5-inch floppy would take about eleven hours to transmit. Using the Demon IV with data compression and error correction the same disk could be transferred in a little under one hour, with a phenomenal saving in time.

The modem comes with a plug already in situ and a standard PC-type serial lead, although other configurations of lead are available on request. The front panel has an on/off switch and a battery of lights that come on like Blackpool Illuminations when the unit is switched on. The unit communicates with the outside world via a standard lead with a plug that fits into a Telecom 600 socket and a similar socket on the rear panel of the modem allows through connection of a standard telephone. A set of dip switches on the rear panel allow custom setting for a number of the modem's functions at power-up.

ON TEST

We put the Demon IV between a PC and the phone line and left it in charge of a bulletin board. The system operator (sysop) was worried at the thought of an unknown modem on his line, but after a tweak to his software to utilise some of the more powerful features of the Demon IV, it was left in auto-answer mode and performed the job adequately. During the test period, callers used to logging on at 1,200 baud read the intro screen and logged off, only to ring straight back to utilise the faster 2,400 baud mode. Sysop Jeff Ryan said: "Software downloads and uploads have increased threefold with the faster speeds and extra features available."

The well-written manual contains input from modem users as well as 'tech heads' and there is a balance between necessary technical information and easy-to-digest facts. Nothing is assumed and the first page of the manual begins by offering and answering the question: "What is a modem?" It isn't until the reader has been offered an understandable description of a modem, its functions and the facilities available with the Demon IV, that installation is tackled.

The LEDs, controls and dip switches are described in simple terms in a way that should help even the most novice comms user to get set up and ready to go on line in the minimum time.

The Demon IV isn't the cheapest modem on the market, but those looking for a value for money solution to comms that will give them speed, efficiency and ease of use will flock to buy it.

The Demon IV costs £299 from Modem Marketing on 0733 371388.

CUB 3000

Microvitec's Cub 3000 monitor is a dedicated Archimedes 3000 device specially designed for schools – and with a fresh lick of paint as well.

The Cub 3000 is a dedicated, medium-resolution colour monitor designed to connect directly to the Acorn A3000.

The Microvitec Cub series of monitors is no stranger to the computer industry and there was a time when you couldn't walk through a school, college or industrial location without seeing several of these ugly little boxes attached to either a BBC B or some home-grown application-specific piece of kit.

The metal cube that was the hallmark of the earlier Cubs has been retained but, in deference to the colour of the A3000 that it is designed to mate with, it has had a lick of cream paint and looks better for it.

First impressions on removing the Cub 3000 from the box were that compared to some of the spacier designs, or indeed the re-badged Philips monitor that Acorn sells as its own, the Cub looked angular and austere. The square lines and sharp corners give it a peculiarly dated look, but once attached to a socket (plug provided) and an A3000 all thoughts of austerity died.

The A3000 connects to the Cub 3000 using a dedicated video connector and a simple audio lead. The dedicated video lead could make life a little awkward if you wanted to use the Cub with another computer, but no doubt some enterprising individual will offer adapter kits before long.

The monitor is badged as medium resolution, but the quality of the display is certainly at the high end. Sound quality is fine, and even at alien-killing levels it was impossible to persuade the speakers to rumble or distort. Using the Cub 3000 for a marathon eight-hour session of DTP and word processing using the Acorn 'Learning Curve' bundle left me tired but not strained. The high quality of the display meant that the image was comfortable on the eye even from a distance and the sharpness of the display reduced the squint-factor.

The control of brightness and contrast made it possible to get a display clear enough to use in most lighting conditions and only when a light source reflected directly from the screen was the display impaired. In low and no light conditions the Cub proved good to use without giving out too much secondary luminance.

It also proved up to handling the display of games software where the emphasis is on both movement and multi-colour graphic projection. The Cub took the fast scrolling of many colours in its stride in an environment where the 'crisp' graphics are on the move. The display proved as crisp round the edges of the screen as in the middle and the display of a cross hatch proved it could maintain this sharpness right to the edge of the screen.

Unfortunately the ergonomics of the Cub 3000 didn't match its functionality, with the poorly-sighted controls being in a position where they could easily be damaged. The audio lead also protrudes directly from the rear of the case, which makes it all vulnerable.

On balance, the Cub 3000 is a very well made monitor that provides a display of a quality normally only found on high-resolution monitors. Despite the niggles about the design and the knobs, the Cub 3000 offers the best possible value to someone wanting a functional monitor of good quality. ■

The Cub 3000 costs £220 from Microvitec on 0274 390011.

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TECH TIPS

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HELP! Long Samples

I am considering purchasing an Amiga 500 computer in the near future and I have a query concerning sound sampler/sequencing software. I should like to know if there is a package or combination of packages that would allow you to sample a sound and play it back at a reduced speed but at the same pitch. There is an Akai device on the market called a 'Phase Trainer' but the sample time is restricted to about eight seconds and I really need longer.
Steve Lewis, Ealing

If you need longer samples than a few seconds you'll have to look into the realms of virtual memory, as samples are very memory- and storage-intensive. While I haven't heard of software that does this on the Amiga, at least one company has brought out a PC sampler that uses a hard disk as virtual memory and which can spool samples in and out of the computer. Using this technique, samples lasting minutes are possible. As the Amiga has in-built sampling abilities, there must be someone developing a similar system for the Amiga.

While you're waiting for some kind of purpose-designed kit to be developed, try TFMX from Demonware which, I'm assured by colleagues on *Amiga Format,* is a twidge tasty. Remember to check its features with your software dealer before you buy though.

HELP! Fishin' for chips

On a recent expedition inside my Atari 520STFM I came upon what must be the DRAM chips: four chips lying side by side with twenty pins (ten each side) surface mounted. At one end of each of these is a capacitor (or maybe a resistor, but I doubt it). Below these chips is space for four more, with the capacitors already fitted.

Could I purchase the four chips and fit them myself? The cost of a 512K to 1024K upgrade for an ST with a surface mounted MMU is quite high – I am on an ITEC course. Is this the low cost answer or a way to blow up my machine?

By the way, the lettering on the chip is NEC Japan D424256C-10 8832KY006
Brian H Neary, Stockport

It's not as simple as welding the appropriate DRAMs in. The helpful chaps at Atari explained that resistors would be needed on the Row and Column select line, and that the direct soldering was definitely a job for the experts. Should you wish to continue, however, the resistors needed are

R71 33 Ohms
R72 33 Ohms
R73 33 Ohms
R58 68 Ohms

You live in Stockport so you're close enough to The Chip Shop (061-483 1969) to make a phone call worthwhile.

TIP RS232 output

Although the Microreader has been designed for use without computers, there are times when you may wish to see the results on a larger screen or obtain a printout. To achieve this, the MKII Microreader is fitted with an RS232 output port that allows direct connection to compatible printers, terminals or computers. The baud rate for use with such equipment can be varied from 600-4,800 baud. Full text editing is maintained on external equipment!
Name and Address withheld by request

HELP! Only a lead?

I recently bought my first computer (an Amiga), but at the time I could not afford a monitor. Not long afterwards, I was at a computer auction and, not knowing anything about computers, I foolishly bought a colour monitor which was an Olivetti from the M280 PC range – thinking that all I would need would be a lead. I then spent hours on the phone to Olivetti, but they were not all that interested.

To date, I still don't know whether they are even compatible, let alone whether I can get a lead or not. I would be grateful if you could help me with this problem, or tell me whether there are any local dealers who would part exchange the Olivetti for a monitor that I could use with my Amiga.
Michael McDonald, Birmingham

The Olivetti monitor isn't directly compatible with your Amiga, but a specialist peripheral company (scan the small ads) may be able to do the business with a lead/interface. Even if you do manage to tape it to your Amiga the display won't be too pretty though, so it's probably best to swap it for something that will work – or sell it to the highest bidder.

HELP! CP/M Spectrum

Since I have discovered PD for my Spectrum Plus 3 it has revitalised my interest in the machine. I find, however, that most of the better programs are written on the CP/M operating system, so please:

1. Give me some general information on CP/M.

2. Tell me of any limitations that the Plus 3 would have while running CP/M (for instance. program sizes etc).

3. Print addresses of any companies you know who are selling the CP/M operating system for the +3 through mail order.

4. Explain the difference between CP/M and Mallard BASIC (if any).
I Lindsay, Blackburn, Nr Lothian

CP/M was the 'business standard' operating system when all computers were 8-bit. It is a very compact and efficient operating system but the abbreviated commands (caused by memory constraints) made it appear a little unfriendly. It still exists on the Amstrad CPC and PCW and it's supported by at least three public domain libraries.

The Spectrum has a hybrid form of CP/M that won't work in the full 80-column mode that most CPM utility programs require, but some can be converted and some have even been written for the Spectrum.

You should be able to buy CP/M from CPC, North Road, Preston, Lancs – but make sure that you specify that it is the Spectrum version that you require.

CP/M is the operating system from which programs are run – the prompt you get when the machine is turned on. Mallard BASIC is a language you would write a program in.

HELP! Engine driver

I have recently obtained a second-hand PC Engine games console in excellent condition, but after about 15 minutes games playing, the main console unit becomes very hot to the touch! Is this normal?

A Sinclair Spectrum power supply came with it, could it be this (although it has the necessary voltage)? Should I buy a genuine PC Engine UK power supply? Or can I get it fixed if something is wrong?
N Cutts, Yorkshire

Throw the Spectrum power supply in the first bin lorry that passes and use the proper thing ... but not before you've taken your ailing machine to a reputable computer repairer and had it looked at. If it is getting that warm, there could be something very wrong with it and at best you will end up with a dead PC engine. At worst you could become 'Cold' Cutts.

HELP! Asking for it?

People who live in glass houses shouldn't pile rocks outside their front doors – Glenn Adams of Stockport appearing in *Express* 88.

If Mr Adams spent more time reading his own manuals and less time writing letters about so-called problems that are well-documented, he would find that loading PCW *LocoScript* files into *Protext* is fully covered in the *Protext* manual on page U 4-1. What's more, *LocoScript* file conversion is also in the manual's index – under 'L', would you believe?

But now, I'm afraid, it's your turn to sneer at me. I have just bought, at auction, a daisywheel printer rejoicing in the name of Uchida DWX 305. Once powered up, three of the touch buttons, Power, Error and Test, work, but Line-Feed and Page Advance do not.

After switching on, the head initialises and returns to the left margin, but when I press the Text button, although the head marches merrily across the paper with the daisywheel spinning to and fro and then returns properly after one line, nothing is printed. On closer inspection, this turns out to be because there is no hammer to knock the letter onto the page!

All I know (think, hope) is that it must be Qume-compatible because it takes a bog-standard Qume ribbon, so can you please guesstimate whether it is worth trying to repair and if so, where might I get the parts or the repairs done?

Last but not least, what is a standard bog? They all look very different to me, although the smell is much the same.
John Smart, Hitchin, Herts.

Thanks for the *Protext* tip. The printer that you describe isn't in Tech Tips' Big Book of Clattery Kit but I'm sure someone out there must have one and the relevant information.

Finally, the standard bog, and by this I mean a bog standard bog, is measured by calculating the viscosity of the slime on the surface in direct proportion to the perceived albedo from a 500mW krypton/argon laser set at 45 degrees from vertical. This is then multiplied by the parts per million of methane-associated vapours in the air and divided by a sharp knife with serrations.

HELP! Which Amiga

I would be very grateful if you could find the time to answer a couple of questions:

1. Why is an Amiga A2000 almost £900 more expensive than the A500 (when comparing basic models with no monitors), when all it seems to offer as extras are 512K more of basic RAM, an internal clock and several expansion slots?

2. Is all (any?) A500 software compatible with the A2000? If not, what sort of software causes conflicts?

3. What the hell is an Amiga B2000? If it is related to the A2000, what is/are the differences between the two?

4. How do the Amiga A1500 and A3000 differ from the rest of the range?

I hope you can help an extremely confused individual! Oh, and is it too obvious that I want to upgrade to an Amiga?
Steven Rands, Chester.

To take your 'couple' of questions in order:

1. Because Commodore markets it that way.

2. Yes.

3. The B2000 is the current machine and supercedes the A2000. It is slightly better specified and therefore likely to be the better bet of the two

4. The A1500 is a hybrid upgrade from a third-party supplier that puts a 500 into a 2000-like box and leaves it with better potential for expansion. The A3000 is a highly specified top of the range Amiga pitched at the graphics workstation and multimedia markets.

TIP! Disk drivin'

While everyone is passing opinions on squeezing 1.44Mb onto a 720K disk, may we add our tuppenceworth?

A number of very important factors have not yet been mentioned concerning 3.5-inch disks. Not only does the extra hole on 1.44Mb 3.5-inch disks indicate to a 1.44Mb drive that it is a high capacity disk, it also alters the current to the heads. The 144Mb drives have an extra LED which shines through this hole. Upon detecting the light the drive will automatically alter current to the heads. It will obviously assume from this that this disk has the special magnetic coating which is thinner than that of standard disks.

You can often prove this by taking a HD disk, formatting and writing to it in a standard 720K drive then trying to read it in a 1.44Mb drive. It will normally only read it if you cover the extra hole with a non-transparent sticky tape.

This alteration to the write current is necessary because formatting to 1.44Mb places 18 sectors per track and requires a totally different and finer material, which is able to deal with much faster flux changes during the recording process. As a matter of interest, a 720K disk has 9 sectors per track and a 1.2Mb disk 15 sectors per track. And not a lot of people know that either!
H E Haxwell, Goldmark Systems, Hatfield, Herts.

HELP! Which Apple?

In *Express* 86, I saw an Apple II Euro advertised in the classifieds. I have been told that Apples are extremely versatile home and business computers and I wish to purchase one, but before I do, I have some queries about the machine.

1. Is the machine a Macintosh or just an Apple? If it isn't a Mac, can you make it compatible?

2. The advert says "disk drive and monitor". Do the actual drive and monitor come in a boxed unit like a Mac Plus? If not, please describe.

3. I know that to use a printer you need an expansion card, but is the interface a serial or a parallel one?

4. Is the machine still in production? If so, how much would one cost?
J Patel, Wakefield

1. It's an Apple. It sure isn't a Mac. And no, they aren't compatible.

2. Cream in colour, keyboard and processor bits in one box. Monitor sits on top – disk drives are in separate boxes.

3. Either.

4. No.

HELP! I've a PC200

Now please don't laugh at me, but for the past two years I have been the proud owner of a Sinclair PC 200 (honest!). This had been my first PC and it did what I wanted at the time.

I mainly use my computer for programming, although I do run the occasional game. I now feel it is time to upgrade to a new, faster machine, but I have a few questions to ask you first.

1. Would an 80286 processor be reasonably fast or should I go for the more expensive 80386?

2.. Although I would want a 3.5-inch as a primary drive, would it be worth getting an additional 5.25-inch drive as well?

3. Would I be better off getting a VGA display as opposed to an EGA display?

4. I will want a machine with a hard drive. I think a 20Mb will soon be too small, but would you recommend getting a 30 or 40Mb drive?

5. Finally, I have seen the Olivetti PCS286 and M300, as well as the Amstrad PC2086, 2286 and 2386 computers – with the above queries in mind, would any of these be suitable?
David Way, Bournemouth, Dorset

1. A 286 can fair whizz along at up to 25MHz and will probably be suitable. Cast around for a quick 286 though, as some of the older ones could only manage a pedestrian 8MHz

2. Yes

3. Yes

4. Work out how much space is needed to store your programs and data

5. The Olivetti PCS 286 and the Amstrad PC2286 and 2386 would all suit although the two 286s are a little slow.

Help! Copy cat...

I have recently bought a second-hand Viglen Vig II Elite. Imagine my delight when I discovered that I can copy software programs from IBM and Amstrad onto disk and use them on my new computer. I use to have a Sinclair QL, but that had cartridges which didn't fit other computers.

Some of my games disks are giving errors when I copy them. I wonder if you can tell me if there's a special way of copying, for instance, *Ultima* and *War at Sea*. I look forward to hearing from you as some of my mates would like copies in return for various games which they've copied for me. Because we actually club together to pay for these games, I know it's all legal.
Linton Sanders, Gwynedd, N Wales

What you are doing is illegal and you will surely be caught out if you write to computer magazines giving your full address and admitting to group copying of software. It is definitely illegal to copy any software without the authority of the copyright holder.

The reason why you can't copy the disks you name is because they are copy-protected in order to stop thieves (like you!) stealing their contents. ■

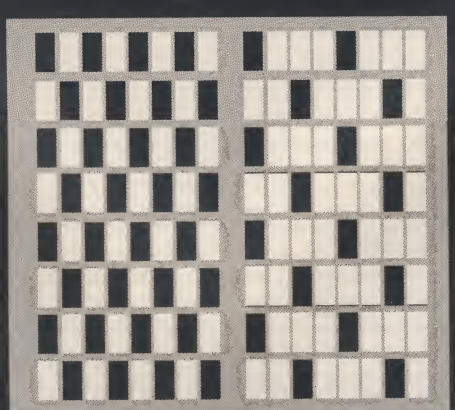
TIP A delight on the palette

While playing about with *DPaint II*, I have come across an interesting technique which your readership might be interested in. It is called dithering.

This is a technique used by professional graphics artists, especially on computers other than the Amiga and notably on the principally black and white early Macintoshes on which it is the only way to generate shades of grey. Due to the many colours provided by the Amiga, however, this method is often neglected, especially by home users.

Dithering, put simply, is the application of many dots (on computers – pixels) of two or more colours so that a shade is produced which is in-between the two colours applied. This is illustrated by the gradient fill provided in *DPaint*. However, for many applications the gradient fill is too grainy.

A much smoother effect can be obtained by setting the pixels individually by hand in a specific pattern. At first this may sound a very difficult and time consuming way of going about it but, using *DPaint*'s magnify and cut-brush commands, it is a straightforward procedure.



• 50 per cent and 25 per cent dithering patterns.

The secret of how to produce a dither effect which does not look too grainy are:

1. Select two colours which are very close to one another; two greys, for instance, which are next to each other in the default palette.

2. Use a very ordered pattern; a 50 per cent (left) and 25 per cent dither (right) are shown in the diagram.

3. Use very small pixels; utilise medium resolution or high resolution in *DPaint*.

4) Display on a TV for maximum effect; this will blur the pixel boundaries – often hiding the fact that a dither pattern has been used at all.

The dither can be use to produce gradients from one colour to another with a completely smooth appearance. If displayed on a television in overscan mode, gradient effects can be produced of broadcast quality.

Another use is to generate 'in between' colours for use in artwork when working with a restricted palette – though this could be tricky to implement. All in all, a useful technique which is worth experimenting with – enjoy.
Andrew Forrest, Ayrshire, Scotland

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In addition to the excellent software built-in to the Portfolio Free of Charge (see right), other software and peripheral products, such as the sophisticated Pocket Finance package and serial/centronics interfaces are available. And it doesn't stop there. Many manufacturers have recognised the potential of the Portfolio and have already started to design new peripherals and software. Products currently under development include: Serial interface with built in mini modem, Apple Macintosh interface, business, utility and programming software plus a range of adventure and battle strategy games. For further free details on the Portfolio range, fill in the coupon below and return it to Silica Systems now.

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TEXT PROCESSOR

The Portfolio's built-in text processor program includes word wrap, line and column count, string search, in fact most of the functions you would find in a word processor. It handles printer and word processor control codes and allows easy transfer of files between Portfolio and your desktop PC.

SPREADSHEET

For real calculating power, Portfolio has a Lotus 1-2-3 compatible spreadsheet built-in. It has 127 columns x 225 rows and reads/writes Lotus V1.0 and V2.01 files, so you can transfer data to and from Lotus 1-2-3 on your desktop PC. The Portfolio's 256K ROM includes MS-DOS and PC BIOS compatible systems software.

MEMORY CARDS

Portfolio can store and retrieve data and programs from its own RAM, or from small credit card size memory cards, that slot into its built-in card drive. The cards are available in three sizes, 32K, 64K and 128K, so you can carry a library of data in your pocket. The card drive also accepts ROM cards, which can contain commercial or custom software.

POWER SUPPLY

Portfolio is powered by three AA batteries which will run for up to six weeks with normal use, or from the mains using an adaptor. All the peripherals take their power from the Portfolio, so no extra batteries or adaptors are required. A 'battery-low' warning and memory back-up ensure that information is not lost when the batteries are changed.

INTERFACES & PERIPHERALS

Portfolio can communicate with other computers and supports a growing range of peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

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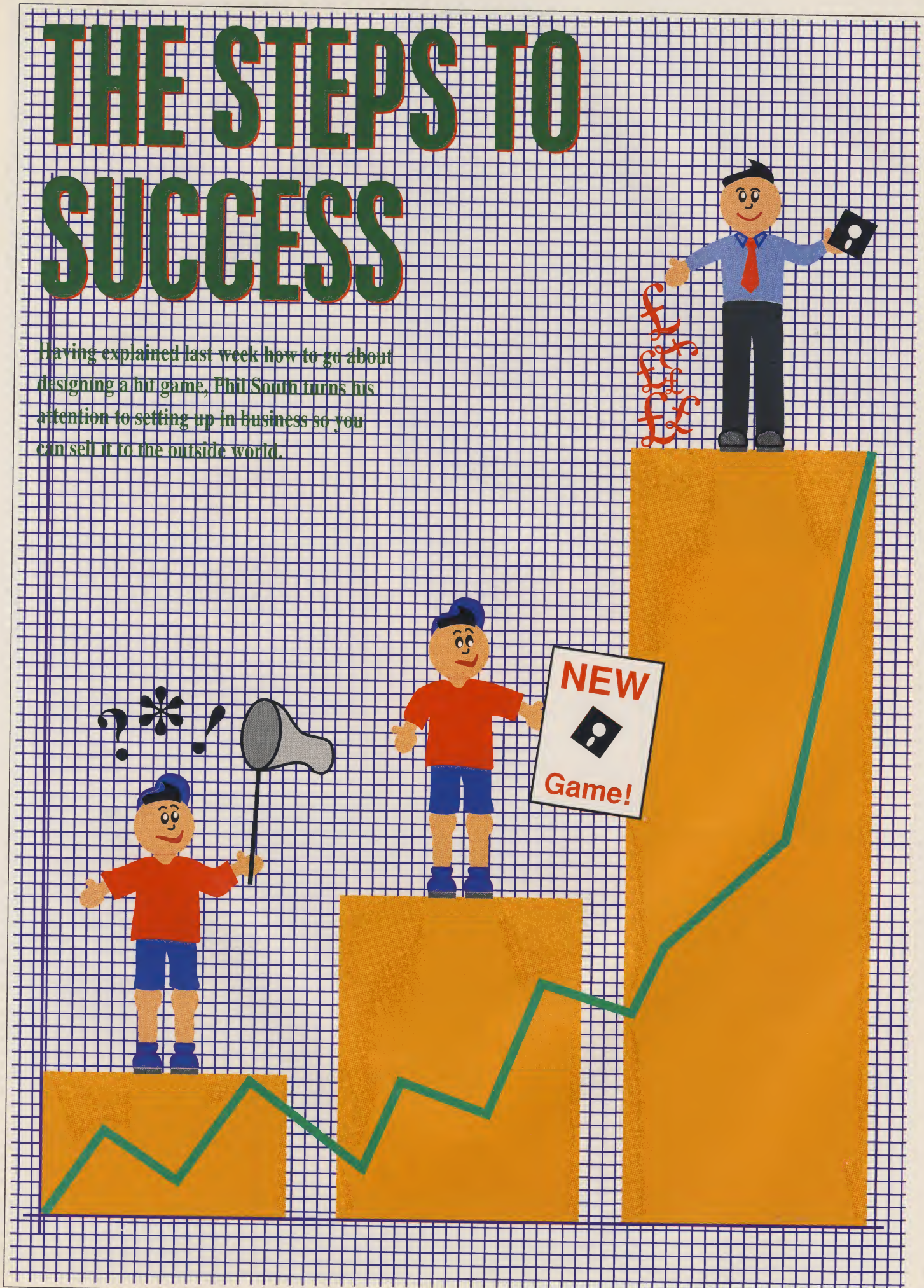
THE STEPS TO SUCCESS

Having explained last week how to go about designing a hit game, Phil South turns his attention to setting up in business so you can sell it to the outside world.



When you buy a game from an established software house and it turns out to be less than you'd hoped, it's easy to say, "I could do better than that." But could you, really? Running a business can be a lot harder than you might expect and now, more than ever, running a software company is doubly so.

But if you did want to set up your own software house, how would you go about it? To begin with you have to have a pile of money to invest in the project, because the basic problem you will face is how to pay for the different stages of the production, from paying the writers, duplication of the disks or tapes, printing of the covers and labels, and so on.

The list is endless, and right from the start you'll have to seek funding for the business. Your bank will clearly be the first stop, where you will ask the loans office for a business loan. Be prepared for this, and make up a report about how much money each phase of the operation will require. Then you will have to have something to put up as security against the loan, like a car, house, or some other asset of great value. You will very occasionally get the full value you require, but in most cases you will have to come up with a proportion of the money yourself. Having got the money, the way forward is long string of phone calls punctuated by wondering why you are doing this to yourself.

FIRST, CATCH YOUR GAME

Clearly the first step is to have something to sell. This can either be a game you've designed yourself or something designed by A N Other. You can advertise for budding game designers in a magazine like *Express*, and pay them in royalties from the game after it is sold. They will usually want an advance on their expected royalties to write the game, but this can be nominal for a small software house. The most important thing about the game design itself is that it must be as perfect as it can be.

Game reviewers are waiting to pounce on the slimmest inconsistency in the design or gameplay of your game, so get as many people to play the game and bug test/play test it as you can. Crack down on piracy by numbering the beta test versions, as they are known, so if a copy leaks out onto the black market you can trace the source of the leak and sue them.

You don't need to have flash offices to produce international best sellers. Most software houses begin working from home and only move into plush offices when they've sold quite a few games, so don't spend all your cash on looking good to the outside world. Your main objective, until you've made some real money, is to get the game out and ensure it is the best game ever.

To let everyone know your game is out there and to give them a chance to find out of what it's like, why not release a cut-down version in the public domain? You can distribute the game to PD libraries and even send a copy to a magazine which puts games on the cover. If you're serious about getting your game noticed, then this is one of the cheapest and best ways to get your name around. If the demo is striking and cleverly programmed, it will generate a lot of interest for the game.

Don't, however, launch the demo, or indeed any other kind of advertising, until you have a pretty-much finished game. If the public get interested in a new product and then hear nothing for months they will lose that interest very rapidly, and then when the product finally comes out they'll just dismiss it as old news. You must get this balance right first time or you'll be dead in the water before you even release a game.

Once you're ready to release you will have to advertise in some way. Taking out full-page colour ads in nationally circulated computer magazines is obviously the best way, as this ensures you the highest profile, up there alongside all your competitors. Get a copy of the latest circulation figures and target magazines which have the highest readership in your particular market. The art for the ad can also be the art for your cover, and this is how things are done in the real world. It's not a cheat, it's just a way of making all the marketing for the game look the same, so people get to recognise your game just by the artwork. Look through the press and see what ads other firms are running.

PRINTING AND DESIGN

Photocopied covers to your games are fine if you want to sell five copies to close friends but if you're selling in the shops then you need to commission an artist to draw or paint a cover and get it printed in colour. Again, this is an expensive business, which will add to the cost of your game, so include this in your calculations.

The way the public perceives you is of paramount importance, so present yourself slickly

Get an unknown artist to do the art and pay them a couple of hundred pounds to do it. Then you need to get a paste-up artist to turn the picture and the text you want on the cover into artwork that the printer can use. Many software houses have fallen into the trap of getting amateurs or family to do their cover art, and although cheap this is a very silly thing to do. Imagine trying to tell your brother that his art is rubbish. Oh yes, and don't ever do the art yourself, even if you're a good artist, as you will never realise if what you've done is suitable because everybody loves their own work. Pay a pro to do any pro job, that's the golden rule.

After you've finished the game, you must get it duplicated, or duped. The more copies you have made, the cheaper it gets.

At some stage you will need to deal with the press, lucky person that you are. The press is not out to get you or looking to put you down, but by the same token it sees every game and it knows a rotten game when it sees one. The writers are also trying to do their job and fill pages, so are keen to see as many games as possible. If you can, arrange to visit the magazines, show them the game and take the editor out to lunch. Trips like this are tax deductible (although not the lunch), so budget for them when you figure out how much the game is going to cost. Create a good atmosphere between yourself and the press, and be as helpful as possible because all the advertising and public awareness of your products in the world can't save you from a bad image in the press.

People read reviews before they buy, and it is your job to show the journalists, who haven't much time to find things out, all the good points of your product. If you're not a good communicator then hire someone to do this for you, like a PR agency. PR people are paid to put your product around and make sure everyone has the highest possible opinion of you. Add this to your budget, and keep the press happy. They are connection to the buying public.

DISTRIBUTION

In order to get your games into shops, you need to get a distribution deal. Go along to a trade show, speak to some distributors and make sure you show them the game to convince them that you are worth their time.

They have also to be sure that they will be able to make money out of the venture. If they are unconvinced then either you don't get the deal, or if you manage to swing it, you will not get priority. Remember that your product is as good as dead if it is not on the shelves. Good distribution is imperative.

When you have a couple of products under your belt you'll have to attend computer shows as an exhibitor and push your forthcoming products to the buying public.

This can be a trying and dispiriting experience, especially in view of the size of the major exhibitors' stands. Don't be put off by this, or be fooled into overspending on floorspace. All you have to do is be there, and worrying about being overshadowed by the major players is pointless if you don't show at all.

Aside from the fact you stand to sell a few games on the strength of people playing it at the show, you raise your profile just by being seen at the show with all the other bods. The way the public perceives you is of paramount importance, so present yourself slickly and no matter what size your stand is, the punters will see that you mean business. One guy in jeans is unimpressive, but a nicely turned-out hospitality girl and a good sign and brochures, speak volumes about the quality of your work.

Having a shelf with some games on is less memorable than a bunch of computers set up so people can play your games. Also it would be an idea if the people manning your stand could play the games and really knew everything about your products, rather than just shrugging and saying they only work there. Shows are also good places to do deals with distributors, all important if you want your products to reach the shops at all.

BORING STUFF

When you've earned some money you have to pay income tax on it and national insurance. There is only one piece of advice we can offer here, and that is get an accountant and get one now, before you even start. They can advise you on all tax issues, and they will save you a pile of money. Their fees aren't payable until they do your accounts, by which time you will have earned some money for their fee, which is usually a percentage of your earnings.

Getting stiffed for huge tax bills unexpectedly is another reason why young companies go down, in the same way that overspending on stuff like offices and stands at shows can do you in. It's easy, all you have to do is stick 25 per cent of your earnings away at the end of each month, and then when the massive tax bill comes the following July or January you will have it stashed away. And don't forget to save receipts for everything you buy, from disk duping 10,000 copies of your game, to staples from the corner shop and even accountant's bills, as they are all tax deductible.

Your friendly accountant can also advise you about VAT which, if you make a go of this software thing, you will have to know about. Once you have a man to look after all your money troubles you can relax and concentrate on the business of production. So avoid the horror of not having the money for your tax bills and hire a little man in a suit right now.

As you can see, setting up in business for yourself is a real minefield, but providing you follow the rules, make quality products and push them effectively to the buying public, you will make a good living out of it.

Do everything in the right order. Don't advertise before you have a product, and don't dupe until you have a distributor. For your first game it's critical that you get it right. After that all the gears will be in motion and you can concentrate on being good at what you really do, and that's making good games. Oh, and one last thing. Good luck. ■

WIN Yolanda, the challenging game

Just the Word

Over the last few weeks we've been neglecting the many games players among our readers. Well, there's no need to feel left out any more. This week we are offering 10 copies of the new platform challenge *Yolanda* from Millennium. Five copies for the ST and five for the Amiga.

Yolanda follows on from the likes of *Hercules* in its goals and intent. There are exploding platforms, fireballs galore, difficult leaps and, of course, the unexpected.

Our sister magazine *ST Format* said this of the game in its September issue: "...in *Yolanda* the action has been deliberately designed to be as complex as possible. Before you take it on, make sure that you can afford a psychiatrist's fee to get your senses back in order."

Amiga Format's Maff Evans told us: "It's difficult and it's a game you'll either love or you'll hate." We think you'll love it.

In fact we liked it so much we made it our ST Game of the Week just a few short issues ago.

Each of copy of *Yolanda* normally costs £19.99 and the way to win your own is this; read through every single word of this week's *Express*, as you normally do, but this time look for one word. It could be in editorial or it could be in an advert. It won't be "hidden somewhere stupid" as one person suggested to us, it will be out in the open ready to be plucked out and used to your advantage. The word you seek is BULGARIA.

Once you have found the word all you have to do is fill in the form below and send it off to: *Yolanda* Competition, *New Computer Express,* Beauford Court, 30 Monmouth Street, Bath, Avon BA1 2BW.

You could stick it on the back of an exotic postcard and cheer up the office. Entries should be received no later than Monday 20, that's in August, 1990.

As in all things, the editor's decision is final.

WINNERS!

The first 10 names out of the editor's 'I Love the Ilframcombe Sharks' baseball cap for our *Quartet* competition were: Ron Spencer, Deal; J Wheeler, Biggleswade; S Martin, Newbury; David Oxley, Brighton; D Burman, Lanarkshire; P Connell, Newport; E Morgan, Co Down; P Briggs, Mansfield; H G Hopkins, Peterhead; D J Lawrence, Southsea; C Tatton, Radcliffe, Manchester

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EXPRESS MAIL

Write and tell us what your views are about anything under the Sun! You can reach us at: *Express Mail, Beaufort Court, 30 Monmouth Street, Bath BA1 2BW.* Sorry, no personal replies – even with an SAE. This week's replies are by Tim Smith.

Doom with a view

I feel I must write to express my gratitude to Jason 'My machine specific column is better than yours' Holborn.

Upon hearing that 'the ST's days are numbered' I rushed out to sell mine at a pittance to a Newbrain owner who wanted to use it as a RAM buffer for his printer. After melting down granny and flogging off her head, I now have enough money for a CBM Amiga, the most wonderful machine on God's earth (so I am constantly told). But before buying it, perhaps Jayse, can answer a few questions:

1. The power supply. When it is hot, can you put bread in it to make toast – the (external) pack is just the right shape.

2. I have heard so much about 'viruses' for this machine, do these come free with the hardware or do I have to go to third-party suppliers for these?

I appear to have run out of questions, but I have done my own calculations on the number of days the ST has left: 8,632 according to my best information. What's your best guesstimate Jayse? Salutations and may your cousin's camel not knacker your Workbench disk.
Chris Holland, Northampton.

Jason couldn't be with us today as he has been forced to do three days of silence as a penance by the Elders of the Church of the Amiga. His crime was to be found using an Archimedes for nefarious purposes. He has, however, sent answers by pigeon: 1) Try crumpets instead, they're funnier. 2) Viruses do not come with the Amiga and the correct spelling for the third parties who do provide them is with an 'ur' rather than with a 'hir'.

Mind the scissors

I am writing to you to warn other readers about Anco's misleading advertisements. In their ads for *Kick Off II* they clearly state that scissor kicks are possible, and the labelled Amiga screen shots contain referees. Neither of these features exist in the Amiga version – even though the back of the box clearly states that you can '...head or chip a ball and do sliding tackles or scissors kicks'.

I rang up Anco to complain and they told me that the version available at the moment is *Kick Off II Plus World Cup 90* and this doesn't have scissor kicks, referees or any extra features on 1Mb STs and Amigas. I was told that Anco would be releasing *Kick Off II* some time in August and this would be complete with referees and scissor kicks for 1Mb Amigas.

How can a company say one thing in their adverts, packaging and instructions but mean another thing? I have tried to take my *Kick Off II Plus World Cup 90* back so I can buy the complete game in August, but as far as the shop was concerned, this was the official and only version – so I would have to keep it.

It is clear that Anco have rushed Dino Dini into producing a version that would coincide with World Cup fever and as a consequence it is incomplete. *Kick Off II* will undoubtedly be an excellent game, it is just a shame that it hasn't got a publishing company to match!
Richard Green, Birkenhead, Merseyside.

We talked to Anil Gupta of Anco about the disparity between the packaging and the actual gameplay of *Kick Off II Plus World Cup 90* and he had this to say:

"Because of memory, we had to make a choice between allowing eight teams and their tactics to be loaded from *Player Manager*, or to have referees, linesmen and scissor kicks.

"The manual was written in February and it was only after this that I made the decision to include the World Cup. After all, the referees are only cosmetic and do use up memory.

"The expanded version of *Kick Off II* for the Amiga will be out in the first week of September. It will include referees and linesmen, as well as scissor kicks but it will lack the World Cup section. If people send in their old Amiga *Kick Off II* disks we will exchange these for the new version. But please warn your readers that the data disks will not be compatible and that the more figures you have on the pitch, the more the game slows down."

There you go, make of that what you will.

Missing address

I hope you don't mind but I had a letter printed in *Express* 90 under the heading 'SAM support' and I rambled on about my SAM Coupé software service.

But you didn't print my full address, so the letter couldn't have had any effect – could you add the full address please?
Jonathan Langford, Zenith Graphics, 42 Aldbourne Way, Kings Norton, Birmingham B38 9UP

The price is right

***Express* 90 had no price on the front cover. Is this the first signs of a free market in computer mags?**
Victor Chudley, Windsor

There are a number of reasons for this new style in cover design. First, as you will no doubt be aware, there was just so much other useful information on the cover of *Express* 90 that we simply didn't have enough room for even as small a number as 58p.

Secondly, I know this to be true because the Editor, Publisher, dinner lady and the guy who does the windows, all checked the front page for every detail before it went to press – so it couldn't have been a mistake could it?

Arms and the fan

I'm replying to your headline story about the '32MHz Atari TT' workstation, which you say is powerful enough to compete with the likes of Apollo and Sun. Where's the 12MIPS going to come from? A 68030 is just not powerful enough to take on the RISC workstations, it's more on a par with the Archimedes and 386 PCs.

Why haven't you headlined the real Sun and Apollo beaters? Yes, I'm on about the Acorn R200 series, retailing at £3,000 and £5,000 (excluding VAT) respectively. They incorporate the 30MHz ARM3, and they dish out 10-12 MIPS. They have extra modes (800 x 700 in 16 colours) and they are Unix workstations unlike the Atari. They will be able to incorporate the ARM4 at 25MIPS when developed, and there's the likelihood of parallel computing with the ARM3.

Okay, so there's a difference in price but also a major difference in power. For £3,000 you can get an 8Mb Arc, with 40Mb autoparking hard drive and a multi-sync monitor, fitted with the ARM3 30MHz. Is the TT a bargain – or the Archie?

Also, your Archie columnist stated there's a 'new' version of !65Host including sound emulation etc. This isn't new, this is old-hat! You're supposed to be up-to-date, not months behind the news.
M Collins, Mid Glamorgan

Hands up everyone who wants a new argument. My Archie is better than your TT? If software houses were prepared to make use of the ARM3, ARM4, 40Mb autoparking hard drives and the Archimedes itself, the argument might just have a foundation in the real world.

64 steps to Heaven

How nice it is to see people still regarding the humble old Commodore 64 as a popular computer and not a pile of scrap.

I am, of course, referring to your new magazine, due out in September, called *Commodore Format*. I will certainly buy your first edition, and if it matches *New Computer Express* standards then were in for another good read.

But it isn't just this magazine I am talking about! Take, for example, if you don't mind me quoting somebody else's magazine, *Commodore Disk User*. A few months ago a certain publisher decided to call a halt to its magazine operations and therefore us good disk users had no hope! Thankfully, within just five days, a new publisher was found, a magazine was put together and was out in the shops at the usual date! So everyone who use to buy *CDU* – it's not dead, go out and buy it!

All the best with your new mag, now I can buy all three of them for my C64!
Bryn Stevenson, Derbyshire

Although it dos, or even does, warm the cockles of one's drives to see the C64 getting the recognition it deserves, I'm not too sure about all this 'go out and buy' chat concerning other magazines. We sit here slamming away at state of the art Macintoshes (except for Keith Pomfret who prefers his Osborne) while you suggest that people look elsewhere! At least you could return the favour by writing to other computer magazines and mentioning *Express*.

VIRAL STATICS

The latest viruses are beginning to grow and develop; to evolve on their own almost like living things. Tim Smith went to investigate, microscope and sector editor in hand.

The computer virus is by nature an evil little devil created by twisted people with nothing better to do. Aside from the fact that it gives the immature or small-minded programmer a tingle of fun to see his or her programmed infection sweep the country, the virus brings no joy.

It will jump from disk to disk in a quest for the unlucky user who boots his or her machine for the 57th time. It will hide, append itself to executable code, doubling and redoubling itself. More and more complex methods of viral behaviour are being developed; who knows where it will end.

Let's try this another way around, a virus is a marvel of programming. Skilled technicians spend hundreds of man hours developing new and exotic ways to explore new areas of the computer.

Hidden areas of operating systems have been brought to light, researchers have discovered different data transmission functions. It's really the fault of the user if they haven't backed-up their data or if they don't bother checking every day that they haven't been visited by an intruder. After all, the most common way to get a virus is from pirated disks, so people are asking for it really.

Even if you are unsympathetic enough to take the second point of view, it is a sad fact that viruses have become part of life and are with us to stay. In fact they are fast becoming a growth industry.

The two main reasons for this are:

• The programmers who produce them are constantly having to combat new and ever more sophisticated virus protection devices.

• More and more people are learning how to produce viruses.

HOW TO CATCH A VIRUS

The most common routes by which a virus can get onto your computer are as follows:

• Using pirated software. This is sometimes looked

THE SHAPE OF THINGS TO COME

Viruses, like the computers they infect, are developing all the time. Gone are the days when your PC would simply print a message on the screen and then erase your hard disk. Disinfectant programs have been developed which can easily track down and destroy these simple viruses. So what is the future of the virus? Here are some possibilities:

• Random mutation or variable viruses. Although the second generation viruses which use self-modifying encryption routines are with us already, a more worrying thought is the virus which can protect itself against disinfection. It is feasible for a program to be written which can identify a disinfectant and avoid it by changing its own position in the system and thereby 'learning' to protect itself.

• Industrial espionage. Firms already contract moles to go into the competition and take documents or bug meetings. It would not be hard to imagine a virus being ported from one company to the opposition in order to crash a system or even alter sensitive files.

• There is already a virus which will make your PC call the speaking clock in Crete. More far out is the rumour of a virus which can redirect your mains supply! Whether or not that's true, more imaginative viruses than simple disk formatters certainly seem to be increasing.

• The latest from the United States is the notion of the virus as an evolving life-form. This has been propounded by Ralph Burger in his book *Computer Viruses as a Hi-Tech Disease*, a book by the way which Ed Wilding of *The Virus Bulletin* called "irresponsible". The general idea is that once the computer virus is made unpredictable, it will be able evolve in a similar way to animal and plant life. The unpredictability means no two viruses will be the same. Not even the original programmer will know what the grandchild of their virus is capable of. The notion of the evolving virus is not that far off science fiction, but there have already been cases of random mutation caused, believe it or not, by dust getting on to disk surfaces. If this is the case, any program can be affected and it's impossible to predict exactly what the results of this process could turn out to be.

• On a lighter note, there is also a possibility of a truly benign virus, one which will act as a guard dog for your computer. Like antibodies these viruses would seek out and destroy any alien files or non-standard pieces of code without you ever needing to know that they were there.

It may even be possible to develop a virus which do a cleaning job, erasing unwanted files, checking for program faults and general taking the drudgery out of the housekeeping. The only problem here is that any mobile piece of code like this may be hacked and used as a vehicle for a malignant version.

upon as poetic justice for those people who copy programs illegally. If you cannot trace the origin of a program disk then you have no recourse, you also have no way of knowing what else might lurk on the disk.

• Downloading files from bulletin boards. This is unfortunately one of the most popular areas for viruses. Infectious code is readily downloadable in the guise of innocent programs from the public domain. One way to safeguard yourself in this area is always to download to a clean floppy, rather than direct to a hard disk, and then make sure to scan the disk with a virus detector/killer (see below) before using any of the downloaded software.

• Booting from untried disks. If you boot from floppy always make certain that you are doing so from a write-protected copy of your master disk. If possible, make sure to scan your disks every week – especially after using any new programs.

HOW TO GET RID OF A VIRUS

If you follow the normal guidelines of never booting from a non-standard disk, never ever using pirated software and keeping a check on who uses your machine, then you should be safe from viruses. However if, through no fault of your own, you find that your computer is infected there may be a software package for your format. Try these for size:

• PC: *Dr Alan Solomon's Anti-Virus Toolkit* for £49. Call Dr Solomon on 0494 791900. A new defence on the market is *Sniper* from Pink Software. This costs £149 and is said to be able to detect 130 viruses! Call Pink Software on 071-259 2100.

• Amiga: For some reason the Amiga is as fond of infection as Typhoid Mary. At the moment the most highly recommended protection is *Virus Killer* 4.3 – version 4.4 is due out soon. This is a public domain program so have a look through Shopping Express for availability. There is also *Virus Killer* 3 from CRL, priced at £9.95. Call 081-533 2918 for details.

• ST: The ST has fewer viruses than the Amiga and therefore fewer disinfectant programs. Try *Virus Killer* 3.9 – version 4 is imminent – again it's from CRL, priced at £9.95.

Theorists in the United States are already proposing the possibility of the 'intelligent' or 'adaptive' virus. That is, a computer disease which is capable of changing itself to avoid disinfectant programs. This would entail alteration through random mutation, making a form of evolution possible. This is not the same as a programmer sitting down and building defences into his (virus programming is still predominantly a male domain) code against specific virus disinfectants.

There are already chameleon-like viruses. These are known as second generation and make use of self-modifying data encryption routines. One to look out for is Stealth, otherwise known as 1260. In order to stop standard scanning devices from picking up tell-tale sections of code which identify the viruses, the programmers of the infections not only encrypt most of the data using a system which produces a different result each

time, but also drop meaningless sequences of bytes into the body of the code which encrypts and decrypts the virus proper.

These random and constantly altering sequences confuse the scanning software, because most disinfectants look for specific identifiers – certain sequences of bytes. The changing face of the chameleon virus makes tracking it incredibly difficult.

THE NEXT STEP

No one is sure what the next link in the evolutionary virus chain will be. Ed Wilding of *The Virus Bulletin* would not even comment on what the experts think might be the progression: "We have produced a discussion paper on the possibilities, and we think we have everything covered, but I don't want to go into details."

One positive point for the future may well be that programmers are now seeing the pleasure and challenge within the creation of disinfectant tools. ■

WATCH OUT FOR THESE

The number of viruses out there waiting to infect your machine is ever growing and of course we can only tell you about the ones which have been detected ... not the ones that are still lurking in wait.

Here are a few of the commonest, and most virulent, types identified so far:

DATACRIME II (PC): According to Ed Wilding of *The Virus Bulletin*: "This is a really vicious piece of code ... getting Datacrime II does not bear thinking about." Datacrime becomes effective between October 13 and December 31 of any year. It will begin to look for a hard disk on October 12, and if it finds one, will destroy the disk the day after.One of the worst aspects of such an affliction is that, even if you have kept back-ups, it becomes extremely difficult to rebuild your disk.

FLIP (PC): This flips your screen image over – and then trashes your files.

STEALTH, AKA 1260 (PC): This is one of the second generation viruses which use self-modifying data encryption to disguise themselves.

4K (PC): Over from Israel, the home of the PLO or Jerusalem virus. 4K evades common detection methods, making it difficult to track.

666, AKA The Number of the Beast (PC): From Bulgaria, which is one of the countries leading the virus producer charts – beware of gifts bearing the University of Sofia moniker. Apparently the virus hides in buffer space before striking.

MDEF: The next step up from the common WDEF on the Mac. Like its predecessor it slows your Mac down.

DEN-ZUK (PC): This has been touted as a benign virus. Its role in life is to seek out and destroy two other viruses. When it finds them it replaces them with a copy of itself. This may sound all very well, but watch out for DEN-ZEK – you don't know who might have tampered with it. In fact, that's the trouble with all so-called benign viruses, they have the potential to act as covers for their malignant counter-parts.

THE GHOST: This is a special nasty for all ST users out there. The Ghost waits in RAM and scans every disk in order to see whether or not it can find itself. If not, it copies itself to the new disk in the form of a new boot sector. Once it has done this ten times it makes the mouse work backwards. The sting in the tail is that it's reset proof – you have to turn the ST off at the mains.

BYTE WARRIOR II: Amiga owners don't escape either, although Byte Warrior II is a relatively straightforward virus It waits in RAM and then infects floppies by destroying their boot sectors.

DISK KILLER: Finally or the PC owner who wants everything, this is a boot sector virus which hides on your hard disk. It only becomes active if the PC has been switched on for 48 hours. On the 49th it encrypts your directory space.

These are just a few of the many viruses out there at the moment. In the PC world alone, it is estimated that there are at least 108 viruses which fall into 48 different categories. If you are unlucky enough to encounter any viruses it would be a good idea to get into contact with *The Virus Bulletin* on 0235 555139 or fax them on 0235 559935. The man to speak to is Ed Wilding.

COMMENT

Now you can download cash from a computer to a smart card. What will the next few years see for the card sharp?

The Keyline smart card story in this week's issue raises several interesting pointers to the future of the pound in your pocket, and indeed life as we know it.

Popular science fiction writers saw the coming of credit cards as the death of cash, and a very enticing idea it was too. But as we all know, although the plastic has arrived as the way most of us spend the biggest chunks our money, it has failed to really replace cash for the lower end of our purchasing power.

Cheque cards, phone cards, and credit cards are all separate, so what the world needs now is a standard, portable and versatile card that you can use anywhere for anything at the touch of a button. Smart cards provide the obvious answer. Let's go forward about five years and see the kind of system we could expect if a smart card system was implemented in Europe.

What would be needed is a card, let's call it the Unicard, which has your personal data on it, acting as a charge card, phone card, identity card, personal phone book and even passport. With this card you could buy things, go out for the evening to the pub, travel and use European machines using the ECU as the monetary unit. Public terminals with an adjacent video phone would allow you to check a world-wide phonebook and download the numbers you need to the card, from which you could autodial from your own menu of numbers.

The card would be easy to lose, but a replacement would be simple to obtain from a bank machine, upon presentation of your eye for a retinal scan

They would also allow you to download funds to your card to buy goods.

At the airport you could pay for your ticket and prove who you are so you can travel with the same device. The data on the chip could also contain a digitised picture of you for further proof of identity, and log your visas as an electronic version of the rubber stamp.

The card would be easy to lose but would be very portable, and be of such high security that you'd need a supercomputer and about 10 years to crack it. If you lose your card, a replacement would be easy to obtain from a bank machine, upon presentation of your eye for retinal scan.

A card containing data from a copy stored in a central computer is made, so all your transactions up till the moment you lost the card are intact.

Cards could be printed in different colours and patterns, like Swatch watches, and held in wallets or hung round your neck on a chain. A simple digital watch and calendar could be made to show up on a tiny LCD panel, which would be charged by a solar cell and updated each time you inserted the card into a machine. The panel could also be used to dispaly other data, as required.

If anything will be the death of the pound in your pocket, smart cards will – you can bet on that. "OK sir, you've placed your bet, will you want your winning in change or credit?" ■

NEXT WEEK

CHECK THIS, MATE
The EXPRESS guide to chess playing programs

MOVE ON UP
Upgrading a PC to a 286, step by step

PLUS

- News of a major new range of home computers
- Win £1,200 of software
- Shopping Express: bargain hunters' paradise
- Tech Tips: top advice
- Letters: First Amendment eat your heart out
- A column for your machine: ST, PC, Amiga, C64, Spectrum, Archimedes, BBC, MSX, QL, PCW, CPC and SAM Coupé
- Five pages of up-to-the-minute news

FROM the ARCHIVE

ONE YEAR AGO

WOT, NO VIRUS...?
The world's most vicious virus was supposed to be triggered on October 12 with claims that it could remain active for two and a half months and regularly trash data on PC hard disks.

The Datacrime virus was claimed to have the ability to come back year after year and do its dastardly deeds between October and January 1.

October came and went and data remained secure. The vicious virus turned out to be no more than a damp squib.

WHAT'S IN A NAME?
High Street chain Dixons served a writ on computer dealer Brian Dixon to stop him trading under the name Dixon or Dixons at any time in the future.

Dixon said that it was ridiculous as he had already changed the name of his shop from Dixons Computer Centre to Micro Tyne.

He added."I'm going to court to fight this. It's ridiculous that I can't use my own name for my own business. I'll see Dixons in court."

• A year later and a fire in the the arcade where Brian Dixon's shop was situated reduced the argument to ashes.

DEATH OF A CAMPAIGNER
Lord Bowden, a leading campaigner for the popular use of computers, died aged 79.

HERR HACKER
West German hacker Hans Hubner told a hacking convention that he had spied for the Eastern Bloc out of technical fascination rather than a desire to further the aims of communism in the western world.

LAPPING IT UP
A portable PC called the Protocol, the size of a sheet of A4 paper and only three inches thick was heralded as the dawn of the age of the true laptop PC at an affordable price.

The 640K machine was priced at £999 and 286 versions were promised by last Christmas.

• One year on and a breach of protocol meant that the promised machine and its 286 cousin have never appeared. The £1,000 price barrier for laptops has been truly broken though, with XT laptops as cheap as £700.

UP THE POLL
Local authorities were instructed to wipe data from their poll tax computers, as questions about relationships between people were found to be irrelevant and in contravention of the Data Protection Act.

ATARI AMIGA?
Atari was caught giving Amigas away to software developers working on its hand-held Lynx console. The B2000s were claimed to be needed as the Lynx was developed in part by the same team that put the Amiga together.

TOO HOT TO HANDLE
Fifty seven holidaymakers were left stranded on a French autoroute at Nimes after the blazing heat 'fried' a microprocessor in the gearbox and left their coach with one gear – reverse.

A service engineer sent out to replace the faulty component had to be rushed to hospital with burns to his fingers after he tried to insert the new component with his bare hands. The coach eventually limped backwards to Nimes where a more conventionally-geared replacement was found.

TWO YEARS AGO

GOLDEN SHOT
The international fight against computer piracy recieved a boost when £636,000 worth of pirate software was seized by the authorities in a co-ordinated raid on Hong Kong's notorious Golden Shopping Arcade.

WATCH OUTPUT
The watch of the future, the Seiko wrist terminal, was selling for as little as £11.00, including an RS232 link that allowed it to act as an outstation to your micro.

The watch of the future seems to have become the watch of the past with little or nothing being heard of it some 24 months later.

Sources: *New Computer Express, Computer Trade Weekly, MicroScope, Computer Talk.*

THE ATARI ABC

Now, there's a PC-AT compatible that not only solves problems like other AT compatibles, it also solves the one problem that its predecessors have created ... affordability.

Silica Systems are pleased to present the new Atari ABC. The ABC is a 286 AT compatible that runs at over 5 times the performance of the IBM XT. This is achieved by combining the power and speed of a 16-bit 286 processor, with Atari Corp's development experience and engineering capabilities, which use the very latest in design technology. However, the Atari ABC's are available at 'XT prices' and many XT owners will wonder why they paid more, but got less!

The ABC is a reliable, high performance computer, built to exceptionally rigorous standards. It is well designed, to a state of the art specification, maintaining maximum expansion capability for the future. This includes up to 4Mb of RAM and 3 AT expansion slots. Plus, unusually for a PC at this price, the ABC has the ability to install two or three extra drives, with the cabling already inside the CPU.

The ABC has a host of impressive features, all built-in as standard, encouraging simple installation and ease of use. In addition, the ABC's small footprint and quiet operating, mean that you will notice it less on your desk than other PC's. Except, of course, when you begin to take advantage of its AT power.

At its remarkably low price point, the ABC is ideally suited for home, office and educational use and will take full advantage of the vast range of PC compatible software. And, with 12 months FREE on-site maintenance (8 hour response), you can rest assured that your ABC will be fully supported.

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286 AT

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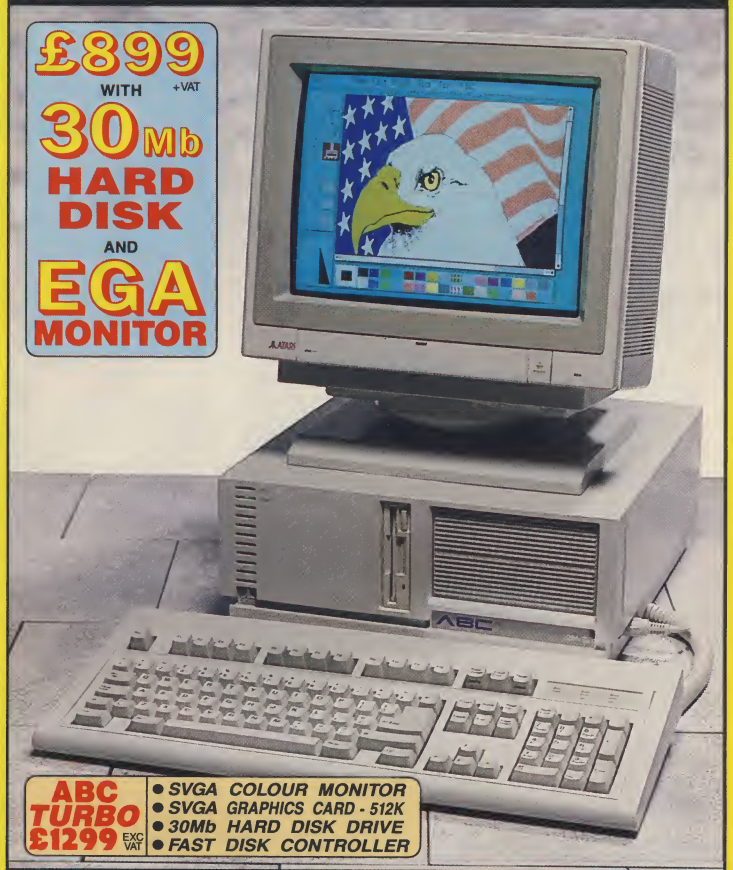

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